"If war were declared to-morrow, what would we do for aircraft?"

AVIATION

MAY 21, 1923 Issued Weekly PRICE 10 CENTS

The French pilot Barbot crossing the English Channel on a Dewoitine 10 hp. light plane

VOLUME XIV

Number 21

SPECIAL FEATURES

THE UNITED STATES NAVAL AIR SERVICE

NATIONAL AERONAUTIC ASSOCIATION POLICY

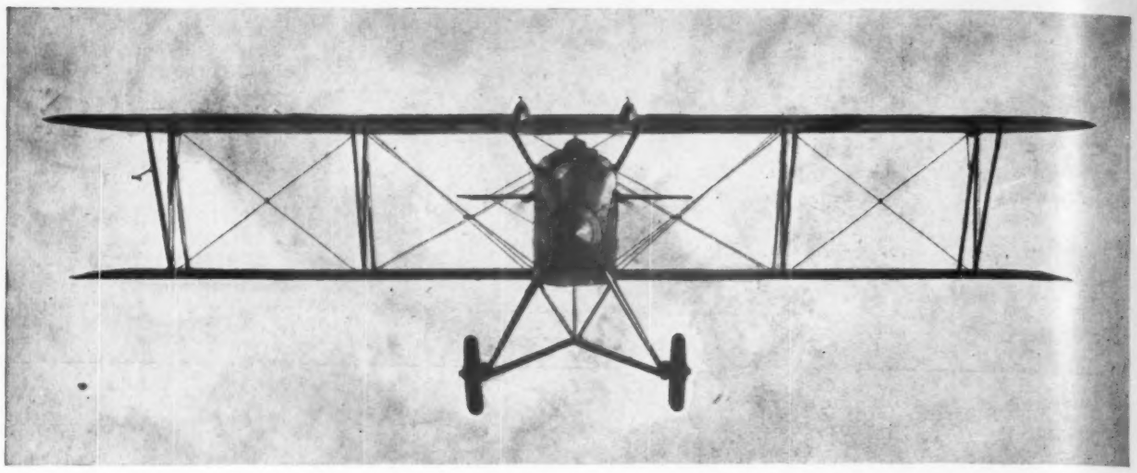
SOURCES OF HEAT ENERGY OTHER THAN GASOLINE

PREPARING THE NATIONAL FLYING MEET AT ST. LOUIS

THE GARDNER, MOFFAT CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office at Highland, N. Y. under Act of March 3, 1879.

Curtiss



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AVIATION

VOL. XIV. NO. 21

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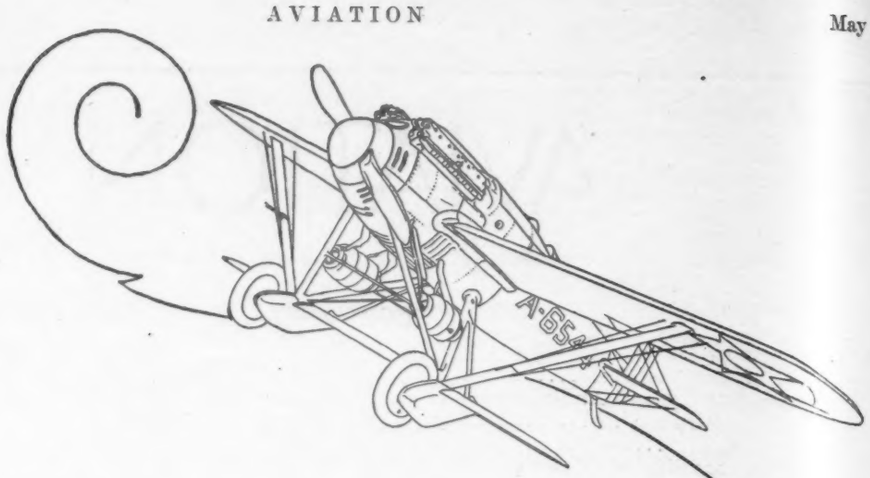

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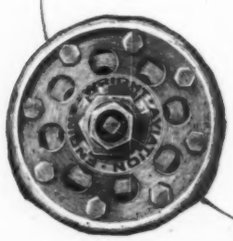

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Vol. XIV MAY 21, 1923 No. 21

Aerial Occupation Forces

H. G. WELLS, in the prophetic book "The War in the Air" which he wrote some fifteen years ago, claimed that while aircraft would offer an unparalleled means of attack, the new warfare would assume an unstable and even chaotic aspect because aircraft did not enable the attacker effectually to occupy the underlying territory. This condition generally held true in the Great War, but it is being rapidly overcome with the increasing size of aircraft.

The experience of Great Britain in Iraq (Mesopotamia) is in this respect highly illuminating and of interest to all governments who have air forces. When the defense of Iraq was considered by the British government, it was decided to entrust it to the Royal Air Force which claimed that it could insure it at much less cost than the army. Sir Samuel Hoare, British air minister, in presenting the air estimates for the next fiscal year, makes some interesting comment on this experiment which proved entirely successful.

"First and foremost there is the fact," he said, "that for the first time in history, not only in this country, but of the world, we have started an independent air command. In Iraq today there is no longer a general officer commanding, but for the first time in history there is an air officer commanding. Every impartial inquirer who has been to Iraq or has looked into this state of affairs without prejudice bears witness to the fact that this experiment in air command is working very well. We believe it is going to save a great deal of money and, perhaps more important than that, we believe it is going to mean the saving of a great many lives and a great deal of effort. Over and over again, even during the short time during which there has been this air command in existence, we have been able by well directed air operations to avoid the expense, both in men and money, which would have been entailed by ground military expeditions.

"Let me give the House one or two examples of the successful experiments to which I have alluded. It has been possible to supply an armored car column and sixteen vehicles with stores, spares, petrol and rations for seventeen days entirely from the air. It has been possible to evacuate 67 persons, military and civil, by air to a point of 70 miles distant in the space of little more than two hours. Only the other day, two companies of an Indian regiment, amounting to over 300 men with Lewis guns and 30,000 rounds of reserve ammunition were taken by airplane to a disturbed district, 65 miles distant, within 24 hours, at a time when the roads were impassable and when it would have been otherwise impossible to move troops at all."

Here then, we have a striking illustration of how troop-carrier planes could in time of war effectually occupy a territory far removed from the ground fighting lines. It means that in future conflicts there will be no localized theater of operations; instead, any section of the warring countries will be subject to conquest and occupation.

The Navy and the ZR1

LAST week we stated in these columns that the ZR1, the big rigid naval airship now progressing toward completion at Lakehurst, N. J., has been much criticized. In all fairness to those concerned with the construction of this ship, it is necessary to elaborate that statement to some extent.

When the Navy decided that it would require large rigid airships for fleet scouting duties, which was some time before the Armistice, it endeavored to obtain the most advanced design available. At that time the Zeppelin was not only unquestionably far in advance of all other rigid types, but it was also the only one which had proven its worth in extensive operation. A large Zeppelin, the L49, had been brought down intact in France, and complete data on this ship were embodied in an exhaustive report issued by the French air service. Hence it was logical that the Navy should have selected this design as the basic type for experimentation and development work. By so doing the Navy not only acquired *en bloc* much of the German experience in rigid airship construction, but it also obtained reasonable safeguards against the many unknown risks which a totally original design would have entailed. The story of the ZR2, an original British design, illustrates this contention.

But though the basic design of the ZR1 goes back to its German prototype, nothing would be unfairer than to say that it will be a mere copy of the L49. As a matter of fact, the ZR1 will be a larger and much more heavily engined ship than the L49. Also, it will be much sturdier than the latter, for Germany's war time Zeppelins, built for short range bombing and high ceiling, were altogether too delicate to stand the strain of the long range fleet duties for which the ZR1 is intended.

As these facts are not generally known, it is but fitting that they be made public. The money that is being spent on the ZR1 is money well spent, and may mean the founding of a national rigid airship industry.

The National Airplane Races

ST. LOUIS is making active preparations to insure the success of the forthcoming National Airplane Races, as may be read in detail elsewhere in this issue. The St. Louis Air Board which is in charge of all arrangements, under sanction from the N.A.A., has much hard work ahead of it if it wishes to equal the splendid record of Detroit, where last year's National Airplane Races were held, but the men who compose it are a brief that it will be equal to this difficult task.

"If war were declared to-morrow what would we do for aircraft?"

St. Louis Preparing National Airplane Races

Air Board of St. Louis Launches St. Louis Aeronautic Corp. to Finance Airplane Meet

St. Louis, Mo., which was selected by the National Aeronautic Association of U.S.A. as the scene of the 1923 National Airplane Races, is actively preparing the organization of this great event. On May 9 the St. Louis Air Board gave at the new Hotel Chase a dinner which was attended by some leading aeronautic personalities and about 350 of the chief business men of the city, and at which plans were drawn up for the forthcoming flying meet. Among the guests were Rear Admiral W. A. Moffett, chief of the Bureau of Aeronauties of the Navy; Capt. Georges Thenault, former commander of the Lafayette Escadrille in the World War and French air attaché at Washington, D. C.; B. H. Mulvihill, vice president of the National Aeronautic Association; Harold H. Emmons, president of the Detroit Board of Commerce, and officers from Scott Field, Belleville, Ill., the big Army airship station.

The St. Louis Air Board

Briefly stated, the St. Louis plans for handling the air meet are in charge of an organization known as the St. Louis Air Board, of which W. Frank Carter is general chairman. Mr. Carter was the head of the citizen's organization which recently succeeded in putting through a $87,320,000 bond issue for municipal improvements and beautification, and has been described as "St. Louis' leading private citizen", The executive committee of the Air Board includes the following committee chairmen: Louis P. Aloe, reserve unit; Philip H. Brockman, policing; B. F. Brush, R.R. transportation; Dr. M. B. Clopton, medical; Martin J. Collins, reception and entertainment; Randall Foster, program; B. W. Frauentha', tickets; Charles F. Hatfield, convention; Judge Wm. T. Jones, organization; George St. Johns, publicity; Carl F. G. Meyer, finance; Albert T. Perkins, grounds; Joseph Rankin, traffic; James E. Smith, concessions; Hon. Henry W. Kiel; Maj. John A. Paegalow, Commanding Officers, Scott Field; F. W. A. Vesper, President Chamber of Commerce; T. Preston Sultan, Chairman Inspection Committee Flying Club and the following officers of the Flying Club of St. Louis: John M. Drescher, vice-president; Richard McAdams, secretary; Harold Bixby, treasurer.

St. Louis looks upon the coming air races not so much as a sporting event, or spectacle, as a means of establishing a permanent air terminal in the city. For that reason the financing of the meet will be on a more elaborate plan than has ever been attempted. The raising of funds is to be accomplished by the sale of 20,000 shares of no-par-value stock in a corporation known as the St. Louis Aeronautical Corp. This stock will be sold at $10 a share, a total of $200,000. A tract of 183 acres in Florissant Valley, 10 miles northwest of the city limits, will be bought and adjoining ground leased. The site is well located as regards transportation and other facilities. It is estimated that $70,000 will be required for the purchase of the ground and $43,000 for permanent improvements, including grading, fencing, erection of steel hangars, etc. Cash prizes totaling at least $13,000 will be offered in the various events and the remainder of the funds raised will be spent in advertising the meet, paying expenses of foreign contestants and other necessary expenses. The directors of the St. Louis Aeronautic Corp. are: W. Frank Carter, chairman; Festus J. Wade; Carl F. G. Meyer; John G. Lonsdale; Maj. Albert Bond Lambert; J. L. Johnston; M. E. Singleton; Joseph Pulitzer; Col. A. T. Perkins.

Program for Air Races

The program for the air races, which has been approved by the National Aeronautic Association, includes among other events an On-To-St. Louis Race, in which aircraft of all descriptions will compete. The idea is to have as many contestants as possible coming to the races by air, all timed, so far as possible to reach St. Louis about the same time. The prizes will be awarded on the basis of type and weight of machine, fuel consumed and distance traveled.

The other principal events will include a race open to Curtiss planes, for civilian pilots only, and a race for military observation planes on Monday, Oct. 1. The following day there will be a race for light commercial planes, flown by civilians, and a contest between large capacity planes, with either civilian or military pilots. There will also be one or more events for airships.

Foreign Entries Assured

On Wednesday, Oct. 3, will be held the Pulitzer Trophy race, the world's air speed classic, in which some of the greatest fliers of America and Europe will compete. Captain Thenault has given positive assurance that Sadi Lecointe, the French speed champion, would participate in this race. His presence will give the Pulitzer Race a truly international character, which may further be enhanced by the hoped for presence of British and Italian entrants. An announcement to this effect is expected before long. Captain Thenault also announced that France would have one or more contestants in the military observation plane race to be held Oct. 1. It is possible that the French air attaché himself will pilot one of these ships.

The day of the Pulitzer Race there will also take place the Boy Scout Model contest for the Mulvihill Trophy, valued $6,000 and donated by the vice-president of the N.A.A. The model contest will be the final event of a series of state elimination contests, the winners in these state contests being given a ride to St. Louis in army planes.

An air mail race, for pilots and machines regularly engaged in the government air mail service will be another feature of the week, and will take place over a triangular course, with St. Louis, Chicago and Omaha as the turning points.

In addition to the principal events outlined above, there will be various exhibitions each day, representing the latest ideas in aerial navigation, in most of which well known fliers and inventors will take part. At these exhibitions there will be shown the latest forms of helicopters and gliders, radio-controlled auto from plane, reversible propeller, aerial combats, bombing of dummy fort by army plane, jumping from balloons, and many other features.

Actual direction of the air races will probably be vested in the Flying Club of St. Louis, an incorporated body, of which the present officers are: Randall Foster, president; John M. Drescher, vice-president, Richard L. McAdams, secretary, and Harold M. Bixby, treasurer.

The fact that Joseph Pulitzer, one of the donors of the Pulitzer Trophy, is a resident of St. Louis and prominent in the Air Board, gives added interest to the races. Maj. Albert Bond Lambert, a pioneer of American aviation, is also an active member of the Air Board. Major Lambert has for several years leased and maintained at his own expense the field at Bridgeton, which was formerly known as Lambert Field.

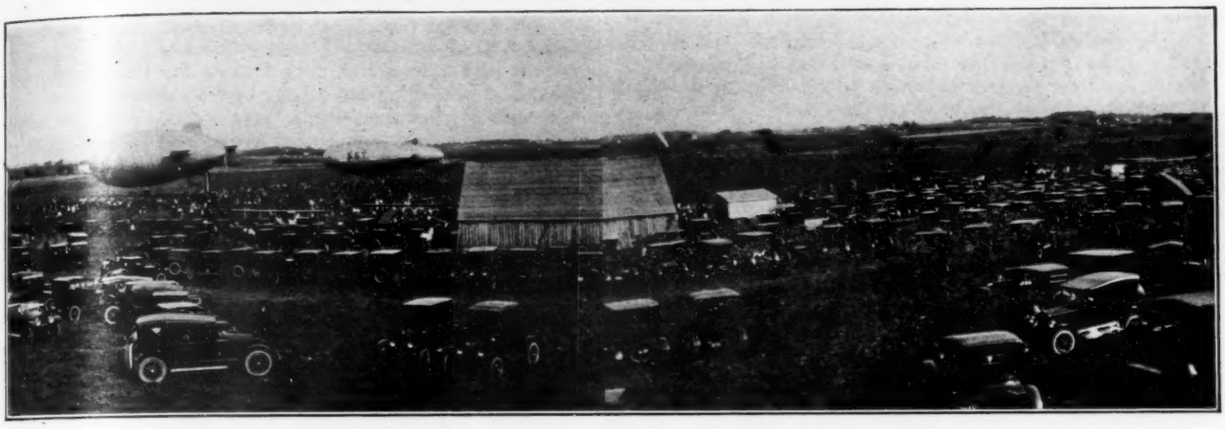
St. Louis Field Dedicated

St. Louis Field was formally dedicated as the site of the coming air races Sunday, May 6, when Mayor Henry W. Kiel, heading a committee of the St. Louis Air Board, welcomed Maj. John A. Paegelow, commanding officer of Scott Field and other officers, who flew over in the Army airships TC1 and SST, and landed at St. Louis Field. Over 15,000

spectators gathered at the field and along near-by roads. Those within the enclosure inspected the airships and all witnessed a thrilling exhibition of formation and acrobatic flying by six planes piloted by members of the Flying Club of St. Louis, William and Frank Robertson, Raymond Wassall, Otto Scott, Joseph F. Read and Robert Laughlin.

In addition to the flying races which will take place at St. Louis Field, near Bridgeton, there will be a number of conventions of bodies interested in aviation, including the National Air Institute, whose delegates will discuss the scientific phases of the subject. These conventions will meet at various hotels in the city.

At the dinner given in the Hotel Chase speeches were made by Admiral Moffett, Captain Thenault, Mr. Mulvihill, Henry W. Kiel, mayor of St. Louis, Mr. Emmons and others. The importance of aviation in future commercial development and as a means of national defense was stressed by the various speakers.



(c) Geo. S. Pietzker, St. Louis

Inauguration of the new airport of St. Louis, Mo., where the National Airplane Races will be held next October. The Army airships TC1 and SST, shown on the left, flew to St. Louis from Belleville, Ill.

Admiral Moffett's Speech

Admiral Moffett brought out the needed stimulus for greater aviation activity in the United States that the meet in St. Louis would give.

"You in St. Louis," he said, "are admirably located to become the focus of the air highways of the United States. One of your resources which perhaps has been overlooked is the Mississippi River. Has the possibility of a seaplane air mail service from New Orleans to Chicago, via the river and St. Louis ever occurred to you?

"The seaplane in many ways has greater advantages than the land plane. Flying over water, the pilot has always a place to land in case of trouble. Witn the land plane trouble may mean a landing on a mountain side or in a treetop.

"It is reasonable then to suppose that seaplane travel will become one of the great commercial factors in the next few years. St. Louis is well equipped to handle this class of aviation as well as the others.

"It is my belief that the rigid type of lighter-than-air craft, or dirigible will become a factor in commerce before the heavier-than-air craft. It is partially with this thought in view that the navy is now bringing to completion the ZR1, a rigid airship, of 2,000,000 cu. ft. gas capacity.

"It is up to us in this country to get behind the development of aviation. The feat of Kelly and Macready in flying across the country last week was significant. First of all, it was a wonderful piece of navigation, and for it the Navy takes its hat off to the Army.

"But beyond that there is a deep significance to the welfare of the country. They flew 2,600 miles without a stop. Within 1,600 miles of St. Louis there are foreign islands which might be the bases of bombing expeditions in wartime. From them fleets could be sent out to bomb St. Louis off the map. That possibility was demonstrated by the two army fliers.

"It is partly for that reason that we should stand behind the army and navy in their efforts to develop aviation. In wartime the country which has the aviation superiority is sure to be the winner. In peacetime the same country will have the commercial superiority."

Captain Thenault's Speech

Captain Thenault said America was so large and the miles so long that, despite the excellence of the railroads, he often wished for an airplane. How we endure such great distances without commercial flying he does not understand.

The geographical position of St. Louis makes it the logical point of junction of all aerial lines, he said, and St. Louis soon must profit by its interest in aeronautics.

"I have been an aviator for twelve years, and more than ever I believe in the near realization of the realm of the air. One of the first will be the daily crossing of the Atlantic Ocean by mail planes in less than 24 hours, probably 15 hours. I predict this will come within eight years. These planes will have several engines, three or five, located in the thickness of the wings."

Captain Thenault then paid a warm tribute to the Lafayette Escadrille.

Tribute to Lafayette Fliers

"During some past days, undoubtely days of glory, but days also of too many mournings, I had the honor to count among the valiant Americans of the Lafayette Escadrille a son of St. Louis whose name is Chouteau Johnson. It will ever be the honor of my life to have commanded these heroes, volunteers who gave their lives because they had come to France to defend a cause they believed to be right. Among these heroes let me recall the names of Victor Chapman, Norman Prince, Kiffin Rockwell and Lufbery. The nation that produced these men was not only a big nation but a great nation.

"Now we must look at aviation under its peaceful aspects, never forgetting that this aspect can suddenly be changed in case of an emergency. A nation must always be ready for any emergency if she intends to remain a nation.

"I see the future of your cities without so many cars in the streets, but surrounded by a belt of parking places for cars alternated with landing fields for airplanes. After business hours I see thousands of people going home in airplanes and automobiles.

"Distances cut to a fourth of their length will enlarge the possibilities of commercial development, and for a people who live like you in a country of green lawns, trees and great country stretches, it will give more happiness and sounder conditions.

"You must get into aviation quickly, for the days are near when tiny machines with engines of only five or seven horsepower will be in general use."

"If war were declared to-morrow what would we do for aircraft?"

He told of the flight across the English Channel by the French pilot Barbot in the Dewoitine light plane fitted with a 10 hp. Clerget engine and how as a result of this feat now everyone in France anticipates the development of the little plane as the next step in aviation.

Mayor Pledges City's Support

Mayor Kiel of St. Louis pledged the unwavering support of the city administration to the enterprise, declaring it to be one of the greatest forward steps ever undertaken by the city, pointing out that the success of the meet will establish a great permanent air terminal there.

"I would advise every citizen who is able to purchase at least one share of this stock," said Mayor Kiel, "as it will be a contribution to the progress of St. Louis and will return tenfold interest to our city."

Mr. Mulvihill declared public apathy toward aviation affairs in the United States had been a national peril, and that if this nation must maintain its place in the sun, there must be an awakening to the possibilities of aeronautics as an arm of defense. Recent records of individual fliers, he said, while viewed largely as sporting events and individual achievements, had a tendency to create a false sense of security. We do not dominate the air simply because we hold all air records, he said, and we must have a preponderant air force to insure a reasonable degree of protection in event of attack.

F. O. Watts, president of the First National Bank, reviewed the history of the movement in St. Louis to bring the air meet there, and paid tributes to Geo. S. Johns and Joseph Pulitzer for initiating the movement—to Joseph Pulitzer particularly for the Pulitzer trophy, given by Ralph, Joseph and Herbert Pulitzer to promote the science of aviation. After outlining the plan for the bond issue whereby the St. Louis Airport is to be financed, Mr. Watts paid a glowing tribute to the St. Louis Air Board declaring that this was the first city to undertake and equip its own special field for the meet."

"The men handling this have provided a plan so great and so broad," he continued, "that there is not a citizen in St. Louis who cannot take part in it, and there is not one who should not feel proud to have a part in it."

"Aerial warfare will be the secret of our successes or the cause of our defeats," said W. Frank Carter, chairman of the Air Board. "We want St. Louis to keep in touch with the country commercially, and patriotically and sentimentally as well."

Harold H. Emmons, president of the Detroit Board of Commerce, told of the national air meet last year at Detroit and of the importance with which that city views aerial transportation development. Mr. Emmons, who had charge of much of the preparation for the Detroit meet, said that St. Louis at the beginning of its work for the event is ahead of the point at which Detroit started to prepare.

"We had no field," Mr. Emmons said. "Our mayor was against it. But after the meet he became a convert and got behind legislation which gave Detroit five municipal landing fields."

Standing tributes were then accorded Maj. Albert Lambert for his pioneer aeronautic activities, and to Maj. John A. Paegelow, commandant of Scott Field, for his assistance in bringing the meet to St. Louis. Motion pictures of the Detroit meet were shown.

Martin J. Collins served as general chairman of the meeting, and Edgar Gengenbach, sales manager of a department store, introduced the speakers.

Radiograms from Gen. Pershing, Howard E. Coffin, president of the National Aeronautic Association; Major-General Patrick, chief of the Army Air Service, and Wright F. Davis, Acting Secretary of War, expressing regret that they could not attend the meeting, but wishing for every success to the enterprise, were read.

The telegram from Assistant Secretary Davis also said that "unless the next Congress makes an appropriation for further development of aviation that service will be lost."

Sowing Seeds by Airplane

Sowing seeds is the latest cooperative venture of the Army Air Service with the Agricultural Department. The Forestry Service of the Territory of Hawaii was desirous of sowing Moreton Bay fig tree seeds over a number of almost inaccessible areas in Hawaii, the primary purpose being one of water preservation over areas now barren. Such an undertaking performed in the ordinary way would have involved months of tedious work and such huge expense as to have rendered same impractical without a special appropriation.

Upon the approval of Maj. Gen. Charles P. Summerall, Commanding the Hawaiian Department, four Army Air Service pilots and two airplanes were assigned to perform this work. According to a report just received by the Chief of Air Service, this task was finished in three hours.

The areas covered were the western portions of the Ewa Forest Reserve and the eastern side of the Waianae Range from Barber's Point to Kole Pole Pass. Both areas are on the Island of Oahu, and the sections covered aggregate eight square miles. Due to the extremely rough character of the terrain, many treacherons wind currents, and the flown altitude seldom exceeding 100 ft., this mission was unusually but necessarily dangerous.

During the first mission of this character, seeds were sown over the rear of the Observer's cockpit, which resulted in both observer and pilot returning to the field with quantities of the seed in their eyes, ears, noses, mouths and clothes, This undesirable feature was avoided by the simple method of fitting a large funnel shaped box with a cut-off into a hole in the floor of the plane generally used for cameras. This method resulted in a steady flow of the seeds when and where they were wanted, and the flow was under control at all times.

Aviation in Chile

In the air races which took place recently between El Bosque and Quintero, the President of the House of Deputies flew as a passenger in one of the fast airplanes. The flying school is located at El Bosque, and the occasion for the journey to Quintero was to unveil a monument to a Chilean statesman, but as many of the state dignitaries wanted to attend and preferred to go by air instead, the flight led to a race between the pilots as to who should get their "Senator" there first. Senor Pedro Rivas Vicuna and Senor Don Hector Zenatu, the former being president of the Deputies, were the first to land.

Captain Aracena, who piloted one of the planes in the race, was forced down by engine trouble forty kilometers from Casa Blanca. Spare parts were sent out from the flying field at El Bosque and the plane resumed flight.

Flyers in the American Army are interested in South American aviation, as they are personally acquainted with several of the flying officers of the Latin American countries, due to the fact that many of these fliers came to the United States to get their flying training through an act of courtesy on the part of the U. S. Government. Lieut. Enrique Zuniga Cooper was one of the popular Chilean aviators who took his training in the U. S. fields.

Declared the "illustrious guest" of the city of Santiago, Chile, Alberto Santos Dumont, the famous Brazilian aviator, was given a most cordial welcome by officials and public alike on the occasion of his recent visit. Fifteen military airplanes took the air at once at the aviation school in his honor; a street was named for him; he was the center of many functions, and the recipient of the *Al Merito* medal from the Government.

"If war were declared to-morrow what would we do for aircraft?"

The National Aeronautic Association's Policy

President Coffin Outlines Constructive Plan for Future of N.A.A.

An editorial in last week's issue of AVIATION *expressed the hope that the return of Howard E. Coffin, President of the National Aeronautic Association would have the result of eliminating some of the unfortunate policies that have been in effect at N.A.A. headquarters during his absence. His letter, printed below, indicates a return to normalcy by the officials in charge and also shows the necessity of having at all times a strong hand at the wheel of the Association.*

The extravagance that has been so generally criticized will obviously be eliminated. It is only fair to the readers of AVIATION *to state that the large and expensive special issues of other aeronautic magazines have been the direct result of the payment by the Association of several thousand dollars to these publications.* AVIATION, *as always, will continue to be independent and support all unselfish efforts to increase the prestige of American aviation, but it does not believe that time, effort and money which could be expended in upbuilding aviation should be used for personal publicity.*

It will not be sufficient for the Association to retrench financially; a clear stated policy, which will set it right in the eyes of the aeronautic community is equally necessary and will doubtless be forthcoming. This statement should indicate that the Association will no longer "furnish confidential reports on all responsible and irresponsible companies from an investment point of view", (See Memorandum on Chapters, N.A.A. Bulletin, published in AVIATION, *April 2, 1923) nor permit local chapters to offer this kind of service. It should show clearly that in the future there will be no favoritism nor will anyone be allowed to use the Association for personal gain.*

A limitation of activities is needed. The Woman's Auxiliary should not be allowed to involve the Association in "activities not only for the advancement of aeronautics, but to further any civic cause of general benefit to the community."

The extent of the authority of the Contest Committee should be carefully outlined. Either the F.A.I. rules pertain only to sporting aviation and the Association is thereby limited, or the Association is able to authenticate all performances, such as the transcontinental flight and others. A retranslation of the F.A.I. rules is imperative as the present translation is misleading. There are many other matters of policy that should be given the attention of the Governors. Aero organizations in this country, hitherto have been unfortunate in becoming involved in personal entanglements. The N.A.A. is too important a factor in our national defense problem to permit a repetition of the experiences of the past. AVIATION *heartily endorses the general plan of the Association and looks forward confidently to the growth and success of its work.*—EDITOR.

President Coffin's Letter

Editor, AVIATION:—

In an editorial in your May 14th issue you mention my return from abroad and comment, at least by inference, upon the influence which my presence here may have on the activities of the National Aeronautic Association. I have been absent three months and following the Rome convention of the International Chamber of Commerce, at which I served as chairman of the United States committee on transportation, a group of us visited north Italy, Austria, Poland, Germany, Holland, Belgium, and France.

Traveling as a group representative of the American Chamber and during a considerable portion of the time as guests of various governments we were afforded ample opportunity for contact with the industrial and political leaders of these countries visited. Naturally, as president of the National Aeronautic Association, I was particularly interested in matters of air development.

You are, of course, cognizant of the resolution on commercial air transport passed by the International Chamber in Rome; also of the similar resolution passed on Thursday last by the United States Chamber of Commerce meeting in New York. These are perhaps of more than passing significance when we remember that at the meeting of the International Chamber in Rome there were between seven and eight hundred delegates representative of twenty-six countries and at the New York meeting of the United States Chamber of Commerce there were in attendance some three thousand delegates from every section of the United States and from practically every unit of our national industrial fabric.

I do not believe that you can too greatly stress these indications of an increasing interest in aviation upon the part of the business men throughout the world.

During the trip a good many times I heard expressed a sincere appreciation of the wonderful records made during the past year by American airmen and this feeling must now be further augmented by the recent performance of Lieutenants Macready and Kelly in their non-stop flight of twenty-seven hours across the continent.

As to the general aspects of the world's civil air transport development I will refer you to my remarks made before the plenary session of the Rome conference in seconding the resolution on air navigation (copy herewith attached). I believe that you will find therein briefly expressed the view of the several hundreds of business men in attendance at the International Congress.

We, here in America, must not view with too much complacency our position in aeronautics because of the possession of world's records. These are after all merely the "high peaks" of aviation and will mean little of practical advantage to us unless we make application of our acquired skill and knowledge in furtherance of the commercial phases of this newest and swiftest of transportation arts. In short, while Europe may lose to us all world's air records yet Europe may still distance us in the general application of aerial transportation to the purposes of commerce and of trade. Neither must we lose sight of the certainty that in any future developments of a military-naval character it is now generally recognized that that nation will be best prepared for war which maintains the greatest commercial air fleet in times of peace.

Above everything else, we here in America must realize our vital need of federal legislation for the regulation and control of aircraft and of the routes over which such craft operate. The direct subsidies now generally being paid by foreign governments to the companies operating commercial aircraft lines, although perhaps necessary because of conditions following the war, are in my opinion breeders of inefficiency and bound in the long run to be detrimental to progress.

That our commercial air transport activities here in the United States must be given governmental aid we all know, but it would be unfortunate if this aid were to be extended through direct appropriation of governmental money to cover operating deficits. Let government aid with us be similar to that we have always extended and are continuing to extend to our other great transportation agencies.

For our water-borne ships we provide at the public expense harbors, dredged channels, light-houses, life saving equipment, communication systems, surveys, maps, charts—in fact all general facilities and aids to navigation, including the services of our national weather bureau. These same facilities, which have been effective in the development and success of our privately owned shipping industries should now be progressively extended to meet the needs of the coming era of commercial air navigation.

"If war were declared to-morrow what would we do for aircraft?"

Certainly there are few who will argue against the extension of this form of governmental subsidy in a field so closely interwoven with our future national security and welfare.

As to the future of the National Aeronautic Association I believe that we are all of one mind. There is ahead of us an unlimited need for the service of a great non-political, non-commercial, civil organizaton of this kind. To render effective the influence of such a body its work must be concentrated in definite directions and not too much scattered. The National Aeronautic Association is a new organization born into a field where there is much to be done in the shortest possible time. It has been inevitable that during this first year of the association's existence there would be many things to be criticized. Especially is this true in an art as new as is aviation and in one subject to rapid change where there is so little of precedent for guidance.

When I left for the conference in Rome a large membership campaign had been planned under the direction of an organization skilled in this type of work. During my absence differences of opinion have arisen as to the most practical methods of procedure and the campaign as originally outlined has been discontinued and the present less ambitious plan adopted. I believe that excellent progress should be made.

You very aptly point out in your editorial that we must begin to think of next year and plan to put the association on a definitely self-supporting basis. I have before me the recommendations of Vice-President Mulvihill in this connection. The membership campaign has, of course, been costly but in accordance with our vice-president's recommendations the Association will, from June 1st, be operated in accordance with the budget and plans outlined at the Detroit convention in October and by the time of the annual convention in St. Louis the Association should have behind it a record of several months of normal and efficient operation.

As President of this organization it is my intention that when the membership of the National Aeronautic Association assembles in St. Louis in October this work may be passed on to the new men charged with the responsibilities of 1924 free of debt and in an excellent position to continue a great national service.

By all means—let's have every bit of constructive criticism possible. It will take the best that all of us can do to "Make America First In the Air."

HOWARD E. COFFIN,
President, National Aeronautic Association of U.S.A.
Washington, D. C., May 14, 1923

Following is the resolution on air transport which was adopted by the International Chamber of Commerce, at its recent session in Rome, Italy, and the speech in behalf of it which Mr. Coffin made in his capacity of chairman of the Transportation Committee, U.S.A., of the I.C.C.

Resolution of the International Chamber of Commerce on Air Navigation

AIR NAVIGATION

"Whereas the International Chamber of Commerce regards the development of international civil air transport to be an essential factor in the improvement of international commercial relations in the future;

"And whereas a preliminary study has been made of this problem and the views of the various national committees, which are set out in their replies to a questionnaire prepared by the Transportation Group Committee of the Chamber, have been duly submitted to the Congress;

"And whereas; while recognizing that aviation must play an important part in national defense the International Chamber of Commerce recommends that any national funds spent on aviation should be in part devoted to developing civil aviation and thereby create a permanent and eventually self-supporting form of transportation and which would at the same time be available for national defence.

"This Congress of the International Chamber of Commerce hereby recommends:

1. That the International Chamber of Commerce establish a permanent international Advisory Committee which will include financial, industrial, legal and aviation experts;

2. That this permanent Commission examine the steps practicable, both immediately and subsequently, to promote the international development of civil aviation for commercial purposes;

3. That the Committee maintain touch with any national or international organization concerned with Air Navigation so as to ensure the closest collaboration, and that it exert every means at its disposal to increase the interest of financiers and business men in this subject."

Howard E. Coffin, President, National Aeronautic Association of U.S.A.

Address by Mr. Coffin

The subject of civil aviation brought before us by this resolution may very properly occupy the earnest consideration of our Chambers of Commerce both national and international. As business men regardless of country, we are interested in expediting communication and commerce, and as patriotic citizens we are vitally concerned with all questions touching the national security and welfare.

Aviation is the one outstanding mechanical heritage of the world war destined to influence greatly for good the future relationship of mankind. Through aviation has come the realization of that dream of all ages, the conquest of the air and the conversion of this final and most baffling medium to the purposes of civilization as its speediest means of communication and of trade. That we are encountering difficulties in the commercial application of this new art, is to be expected—but we must remember that in all history there is no record of any lasting refusal by peoples of a faster and more luxurious form of transport and travel.

Aviation more than any other form of transportation is essentially international in character. Its channel of operation lies through the free spaces of the air above us where

RESOLUTION BY U. S. CHAMBER OF COMMERCE

April 10, 1923

"Aviation has demonstrated great possibilities for the addition of new services to commerce and important means of national defense. That these possibilities may be developed and their national benefits obtained, commercial aviation should receive prompt and sustained encouragement. As requisite to this end, suitable legislation should immediately be enacted by Congress to govern the flight of aircraft and the airways over which they operate."

movement is unhampered by political, artificial or natural barriers. Frontiers, rivers, mountain ranges—even oceans and continents impose little or no limitation upon this movement. Because of the speed and radius of operation of aircraft, states and even countries are passed over within the time required to traverse local districts by railway or by motor car. If the older and slower forms of transportation have influenced civilization greatly, have promoted understandings between peoples, and contributed to the welfare of nations, the benefits of commercial air navigation may be assumed beyond question.

Hitherto in transportation we have thought in two dimensions only, we must in future think in three:—to latitude and longitude we must add altitude.

In the navigation of the high seas thousands of years of practice, of usage and of precedent have brought down to us the laws and regulations covering seaborne traffic—laws even yet not perfect. And here now in the infancy of this latest transportation art, in a realm whose possibilities admittedly we scarcely yet vision, we are face to face with the immediate need that there be created a new code of procedure in three dimensions—the Admiralty laws of the air.

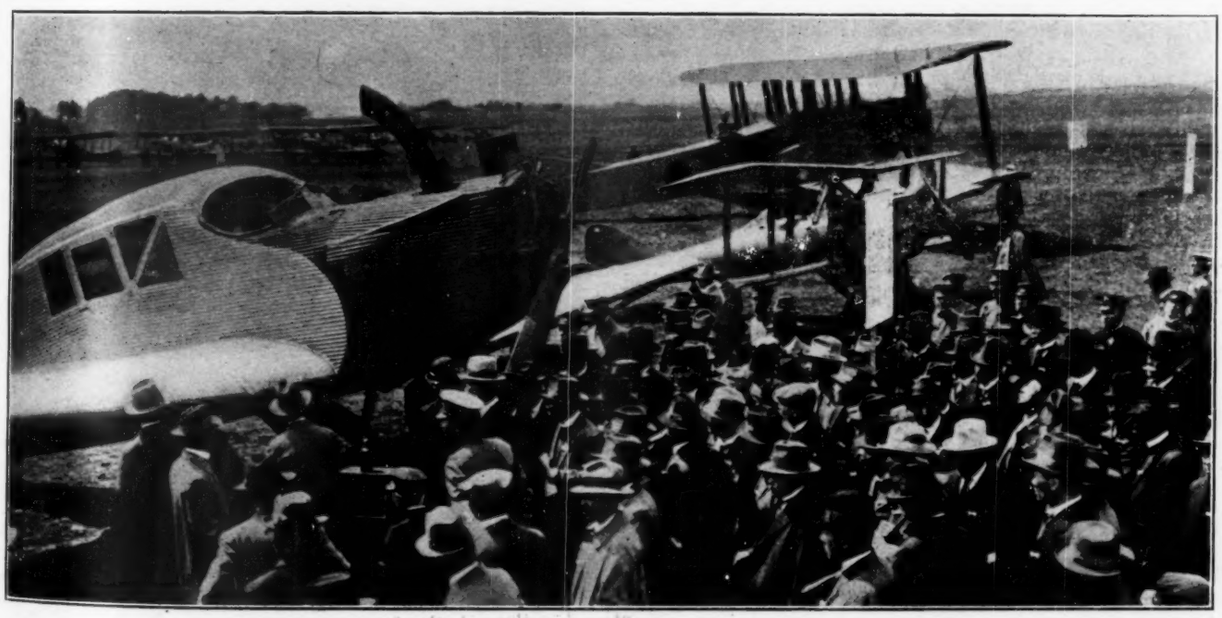
That the development of aviation will far outstrip in point of time that of our other and older forms of transport is a foregone conclusion. The technical knowledge, the engineering skill, the specialized materials and the improved methods of construction and manufacture which have made possible our transportation marvels of the past generation—all are accruing, logically and properly, to the benefit of aviation.

In the realm of the national defense, no country can in future be secure against aggression unless it controls the air spaces above its territory. The creation and maintenance of the necessary air power by nations is inevitable.

Now, whether this air power is financed by direct appropriation sequestered from the realms of commercial activity and thereby lost to the constructive purposes of national life, or whether this air power is founded in large part upon the development of a commercially profitable civil aviation in the form of a "merchant air fleet" may well engage the sincere attention of chambers of commerce of all countries.

While, as commercial bodies and for reasons of sound economics we favor the maintenance of an adequate defensive machinery by each nation, we have certainly cast our influence against the excessive withdrawal of men and money from the fields of production and trade.

There is no doubt that air warfare has of itself put certain practical limitations upon both land and naval armaments, but no adequate effort has yet been turned to the limitation or general direction of aviation as an offensive or defensive asset among nations. Certainly as business men we will be derelict in our duty to the future should we not create the committee proposed in this resolution and thereby give direction to the great influence of the International Chamber of Commerce in this field so replete with potentialities. Mr. President, on behalf of the Delegation of the United States I voice our strong approval and support of this resolution.



(c) Underwood & Underwood

Japanese parliamentary delegation visiting the airport at Tokyo. A Junkers cabin plane, a Nieuport 29 pursuit plane and a Farman Goliath are in the foreground. Salmson observation planes may be seen in the background

"If war were declared to-morrow what would we do for aircraft?"

The United States Naval Air Service*

By Rear Admiral William A. Moffett, U.S.N.

Chief of the Bureau of Aeronautics, Navy Department

I want to render an accounting to you today of an enterprise in which you are all stockholders. That enterprise is your naval aviation service. It is the eyes of your fleet, and the guardian of your gateway to the world.

The matters of which I desire to speak to you have engaged the serious thought of individuals and nations throughout the whole world, during the past few years. As a result we find ourselves today with a challenge in the air—a race for air supremacy, commercially, industrially, and as an instrument for national defense. There is, perhaps, no nation in the world more concerned with problems of national defense at the present time, than is France. As a solution of these problems, she has developed the most powerful air strength in the world. Great Britain has of late years, evidenced more concern for aviation development than she has for the strength and integrity of her fleet. The nations of the world and the great minds of the world recognize the fact that air supremacy spells national security.

I have never put forth the claim for aviation that it would revolutionize the world as regards national defense, or any other line of human endeavor. Aircraft are no more a substitute for armies and navies, than they are for automobiles. They are, however, a tremendously important factor in national defense, and they are destined to play an increasingly important part in our industrial and commercial life.

All of this leads us naturally to the question "what are we doing in this country?" and speaking for the Navy, I answer that question "as much as we possibly can". For we fully appreciate the fact that without aircraft our ships are wellnigh helpless, when pitted against ships which are served by strong and efficient aviation service. Economy has been the watchword in government expenditure in this country, and aviation in the Navy has had to try to make one dollar do the work of two. Every penny that has been expended for Naval Aviation has been spent to develop aircraft for our fleet, and it has taken careful thought and planning to get a maximum return for our money. Bearing this in mind, I want to tell you what has been done.

Our Naval Planes the Best

We have, today, the best naval planes in the world, though they are relatively few in number. We have a comparatively small Naval Aviation force as regards personnel. As regards ability, efficiency, and high standards of morale they are the equal of any similar body of men throughout the world. It is our aim to equip every fighting ship in the Navy with aircraft, from the largest dreadnaught to the submarines. We are building for the Navy, and the work is being done by the Navy, the first rigid airship to be constructed in this country. We have developed a catapult for launching planes into the air from the deck of a battleship. We have successfully perfected means for directing and controlling the fire of battleships from the air. We have saved millions of dollars by developing aircraft carriers through experiments with the ex-collier Langley, rather than make costly mistakes with new types, and the results obtained are worthy of the best traditions of American ingenuity and resourcefulness.

We have perfected the torpedo plane which is, in effect a destroyer in the air. Our air squadrons have just returned from a 7000-mile cruise to the Panama Canal, where they had an important part in the maneuvers of the combined fleets. From Guam to the islands of the Caribbean our interests are safeguarded by squadrons of aircraft manned by Marine Corps pilots.

All of this sounds war-like and militant, but it only represents what is being done by your representatives in the Navy to keep faith with the trust that you have reposed in them, and it is a part of our duty to keep you informed of what is being done and of the needs of the Navy, which are, in the final analysis, your needs.

Within the past few years, we have had the greatest full scale lesson in preparedness in the history of our country. I do not need to point out to you the salient features of this costly lesson. They are known to all of us. But I must point out the fact that another such lesson which found us unprepared in the air, would probably result in a national disaster. You have heard military training as a measure of preparedness, urged by the most prominent leaders of the country. Every thinking man recognizes this as a measure of safety and sound economy. On the same grounds and of even greater urgency, is the need for aviation training throughout the country. In a national emergency, we could not create an air service over night. The building of air power is comparable to the building of sea power. It is based on years of experience and training. In the event of war, the cry would be for trained pilots by the tens of thousands. We have been unable to build up a reserve for Naval Aviation with the funds that have been allotted. We can barely meet the requirements of the active naval forces with these funds. We have only been able to build a solid foundation for our structure, but my warning is, that the structure itself cannot be put up in a day.

The Need of Air Legislation

England and France are spending millions to create a

Official Photo, U. S. Navy

Rear Admiral Moffett congratulating Maj. R. S. Geiger, U.S. M.C., who successfully led the flight of four Martin Bombers of the Marine Corps from San Diego to Washington, D. C. On the extreme right is Secretary of the Navy Denby, on the extreme left Maj. General Lejeune, Commandant of the Marine Corps

*Speech delivered before the St. Louis Chamber of Commerce, Wednesday, May 9, 1923.

"If war were declared to-morrow what would we do for aircraft?"

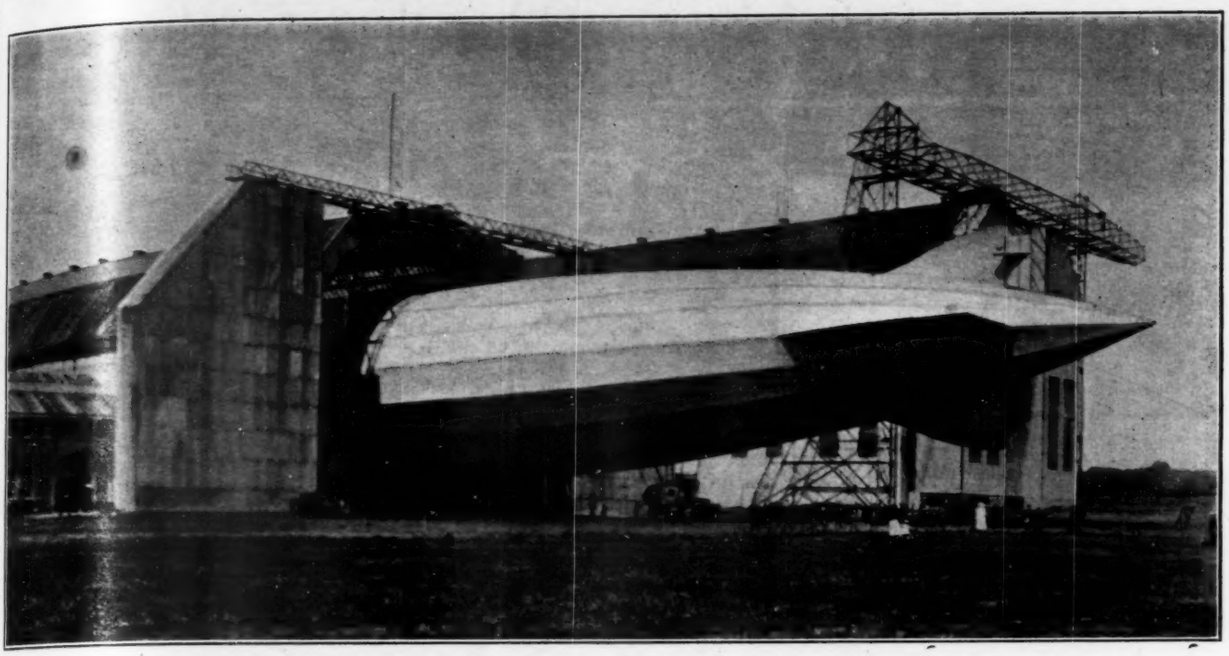


Photo Kadel & Herbert

U. S. naval airship ZR3 in process of completion in the Zeppelin plant at Friedrichshafen, Germany. This ship is to be flown to this country by a German crew during the summer

reserve for aviation in the army and in the navy. This money is being expended in subsidy for commercial aviation. This country has even neglected to pass laws regulating commercial aviation. Such laws would be a great stimulus to aeronautics, for they would stabilize commercial air transportation and facilitate its healthy growth by creating public confidence in aviation. This confidence is now lacking largely because of the uncontrolled and irresponsible "gypsy" fliers who operate without restraint and very often with unsafe equipment.

Another important consideration has been neglected, and this is the conservation of our helium supply. We are the only country in the world having a supply of helium adequate for an ambitious airship program. This supply of helium is a natural resource of incalculable value. It would enable us to develop airships on a scale which would be impossible in any other country in the world. Helium in airships practically eliminates the fire hazard, and this hazard has been the weakest characteristic of airships. The use of helium would be of tremendous advantage in the development of commercial airship transportation. Immediate measures should be taken by the government, looking to a comprehensive program of conservation of this valuable, natural resource. We are operating a helium plant at Fort Worth, Tex., at the present time, to supply our immediate needs, but there are other localities where helium can be produced, and where it should be conserved for the future.

We Lack Aircraft Carriers

The Limitation of Armament Treaty allows to this country 135,000 tons in aircraft carriers, and a similar tonnage is allowed to Great Britain. The so-called 5-5-3 ratio is an acknowledgement by the world powers, that this country should of right maintain a Navy equal to that of any in the world. This, they have admitted is commensurate with the dignity of the United States and is a necessity to protect our interests. Our policy of non-participation in the counsels of Europe lends even greater force to this need. You may or may not have heard that we are not maintaining this status, as regards aviation. Great Britain has six aircraft carriers in commission—we have one. And that is an experimental type totally unsuited to war time use. We have two carriers now building, but these will give us less of our allowed tonnage in these vitally important ships.

In conclusion, I would emphasize the following points:

No development of the age in which we live is of greater significance from a standpoint of national defense than is aviation.

The Navy has developed an aviation service of gilt-edge A-1 quality, but of inadequate size to serve our best interests. We are prepared to expand this organization when the vital importance of it has been borne in on the consciousness of the people to whom it belongs.

A Huge Airplane

Construction of an airplane with a radius of 2,000 to 3,000 miles, carrying twenty passengers and able to go from New York to Peking in approximately 65 hr. with only four stops soon will be a reality, according to Brig. Gen. William Mitchell, Assistant Chief of Air Service, addressing the Lions club at Washington, D. C. on May 8.

General Mitchell said a plane was being built having a span of 125 ft., 30 ft. high, having three engines on each wing and requiring eleven men to navigate it and burning approximately 1,000 lb. of fuel an hour. With this plane a trip across the continent could be made in daylight without any stops.

New Air Line

The International Aerial Transport, Ltd., Crystal Beach, Ontario, has been organized to operate a flying boat service with headquarters at Crystal Beach Amusement Park. The boats to be used are HS2L 6-seaters.

The new flying service numbers among its organizers several prominent motor boat yachtsmen from both sides of the border who have taken up flying as a sport. Vice-Commodore George Hall of the Buffalo Lounge Club heads the project. Others interested are Commodore James Thoner, Ex-Commodore Ralph Sidway and Past Commodore Humphrey Birge and Clarence Sidway.

Several hunting and fishing trips by flying boat to Long Point, Ontario, are planned for the present season.

"If war were declared to-morrow what would we do for aircraft?"

Sources of Heat Energy Other than Gasoline *

By P. Meyer

The weight of gasoline consumed, plus the weight of the tanks, reaches the weight of the engine itself in about five hours' flight with a fixed engine, or in a much shorter period with a rotary engine. Any reduction in the weight of the fuel is, therefore, bound to prove advantageous. The possibility of reducing the consumption per horsepower-hour will not be considered, but merely the possibility of finding lighter sources of heat energy.

Gasoline the Best Fuel

Of the hitherto exclusively employed fuels, which burn by combining with atmospheric oxygen, gasoline appears to be the best, since benzol has a lower calorific value. From the technical point of view, the chemical composition of gasoline is about 85 per cent C and 15 per cent H. This gives, as a conservative estimate of the heat value, $81 \times 85 + 287 \times 15 =$ 11190 kilocalories. The composition of refined petroleum (kerosine) does not differ much from that of gasoline. Benzol is 92 per cent C and 8 per cent H, which gives a heat value of

$$81 \times 92 + 287 \times 8 = 9748 \text{ kilocalories}$$

The heat values of both, as determined by calorimetry, are somewhat lower; for gasoline about 10000, for kerosine about 10200, and for benzol about 9590 (kilocalories or greater calories). This difference, in comparison with the heat values calculated on the basis of the chemical combination of the elements, permits the conclusion that there are exothermic compounds in these hydrocarbons.

From the details of the calculation, it is seen that hydrogen with 287 k-cal per 0.01 kg. is of greater significance than carbon with 81 k-cal, suggesting at once that we must adhere to compounds rich in hydrogen, or look for endothermic compounds in which, when the atoms are separated by combustion, the heat absorbed in combination is given off at the same time. The possible effect of the latter circumstance is illustrated by acetylene (C_2H_2) which, with the same proportional composition as benzol (C_6H_6), has a heat value of 11600 cal. It is in fact, a compound capable of disrupting explosively.

Ethylene (C_2H_4), propylene (C_3H_6) and butylene (C_4H_8) have each twice as many hydrogen as carbon atoms. Their carbon content is therefore about 86 per cent and their hydrogen content about 14 per cent. In this respect they are somewhat lower in the scale than gasoline. In spite of this, their heat value is rather higher, the cause lying in differences in their heat of combination. The difference in comparison with gasoline, is too small, however, to offer any prospects.

Methane (CH_4) with 75 per cent C and 25 per cent H is disappointing, since its actual heat value is only 11900 k-cal, as against 13250 given by the combination of its elements, without taking into account the heat of combination.

The search for substances rich in hydrogen must finally lead to pure hydrogen itself, which, in fact, with 28700 k-cal, is by far ahead of all other known fuels. The requisite weight of fuel, with equal utilization of the heat energy, would be only 0.35 that of gasoline. In the engine itself, the use of pure hydrogen could give rise to no insuperable difficulties. Unfortunately, it is a gas under ordinary conditions and occupies a large volume. To keep it in a condensed form, strong containers are required, whose weight is many times that of the enclosed gas, so that all the advantages of this admirable fuel are more than counterbalanced.

There remains only the question of carrying it in a liquid state, as has been done with oxygen for breathing at high altitudes. Although, in fact, the liquefaction of hydrogen is much more difficult than that of oxygen, it cannot be regarded as impossible. Moreover, liquid hydrogen has the very low density of 0.033, which is only 1/30 that of water and about 1/20 that of gasoline. It would therefore occupy $20 \times 0.35 = 7$ times the volume of its heat equivalent in gasoline. Naturally, this would have an extremely unfavorable effect on the weight of the containers, which, in any case, would be heavier than gasoline tanks, on account of the heat insulation. Hence, it is very doubtful whether the utilization of hydrogen as a fuel lies within the bounds of possibility.

Acetylene and Methane

Far less is this the case with acetylene and methane. Both must be liquified, if pressure containers are to be dispensed with. In the liquid condition, acetylene has a specific gravity of 0.23 and has about three times the volume of gasoline. The specific gravity of methane, unfortunately, could not be found. In any case, it would be much lighter than gasoline, so that the small superiority in heat energy could not make up for the greater size and weight of the heat-insulated containers. This reconnoitering in the domain of the hydrocarbons, including hydrogen itself, reveals no prospect of a reduction in the weight of the fuel. Whether better proposals can be made remains an open question.

Explosive substances will now be submitted to examination, although they offer no prospect of success.† To the layman they appear, naturally, as an enormous source of energy, and stimulate him to invention. The nature of an explosive lies in the fact that the elements which combine with release of heat, are entirely contained in it, while other fuels take oxygen from the air. The significance of this is due to the fact that the 85 per cent of C in gasoline requires about 226 per cent of O for combustion and the 15 per cent of H about 120 per cent of O, so that gasoline requires 346 per cent or, in round numbers, 3.5 times its weight of oxygen. One kilogram of the combustion products of gasoline and oxygen has therefore a heat value of only $\frac{10600}{1 + 3.5} = 2350$ k-cal. Most explosives likewise depend on the combustion of a substance with oxygen contained in some other compound, e.g., in the form $N O_2$. As N takes no part in the combustion, we must add 14 N to 32 O, so that the weight of the oxygen is increased by its carrier in the ratio $\frac{32 + 14}{32} = 1.44$ times.

For the combustion of gasoline, the oxygen with its carrier would increase the weight of the gasoline about five times, so that a hypothetical explosive consisting of gasoline, oxygen and the indispensable oxygen carrier, could have a calorific value of only $10000/(1 + 5) = 1770$ k-cal. An increase of 885 k-cal would in fact be added, since $N O_2$ is an endothermic compound, and gives off, on disruption, 177 k-cal per kg.

The known explosives are in no way superior to this hypothetical explosive, as is shown by the following table of calorific values per kg., as determined by calorimetry.

Blasting gelatine	1640	k-cal per kg.
Nitro-glycerine	1580	" "
Dynamite (75%)	1290	" "
Gun cotton with 13% N	1100	" "
Collodion	730	" "
Pieric acid	810	" "
Irinitrotoluene	730	" "
Black powder	685	" "
Fulminate of Mercury	415	" "

*From Technische Berichte, Vol. III, No. 3, pp. 74-75. (1918). Translated by the National Advisory Committee for Aeronautics.

†The part dealing with explosive substances is the result of a conference with my colleague, H. W. Fischer.

While explosives, without any reference to the possibility of their use in engines, are already seen to be entirely unsuitable, on account of their limited supply of energy per unit mass, for use as fuels throughout the whole duration of flight, we must not exclude the possibility of their use to increase the power output for brief periods.

Their efficacy rests on the possibility of their being admitted into the cylinder in liquid form, without crowding out the atmospheric oxygen, thus affording a second source of energy without impairing the efficiency of the original source and without the necessity of carrying any considerable weight of the explosive, on account of the brief duration of the power increase.

The tactical advantages, resulting from the possibility of an occasional increase of power, need not here be discussed.

Air Mail Furnishes Important Wind Data

A discussion of the wind factor in flight as it affects commercial aviation was presented at the recent semi-annual meeting of the American Meteorological Society by W. R. Gregg of the Weather Bureau of the U. S. Department of Agriculture. Lieut. J. P. Van Zandt of the U. S. Air Service collaborated in analyzing the records, based on one year's Air Mail Records between New York and San Francisco, which show that allowance must be made for a wind of about 7 m.p.h. from the West, at the average altitude of air mail flight.

A more detailed study of the New York to Chicago part of the route gives almost exactly the same wind factor as for the entire trans-continental route. This value of the wind factor has been verified by an examination of 8,700 upper air observations with kites and balloons, and the agreement is remarkably close. The importance of this agreement lies in the fact that, in fixing flight schedules in other regions or at other altitudes, dependence can be placed upon either method in case only one is available.

Schedules that can be guaranteed 90 per cent of the time have been determined for aircraft of any cruising speed between 50 and 150 m.p.h. In making up these schedules allowance has been made for head winds of 36 m.p.h. or more in westward flight, and 20 m.p.h. or more in eastward flight, as these winds have been shown by kite and balloon records to occur 5 per cent of the time. When they do occur flights will be somewhat delayed, but nevertheless completed. During the remaining 5 per cent of the time flights are likely to fail altogether or be seriously delayed because of exceptionally unfavorable weather, such as severe rain or snow storms, poor visibility and other difficulties.

Aviation in Czecho-Slovakia

The Government proposes to vote a credit of 150 million crowns for the Air Service for 1923. This represents an increase of 22 million crowns over last year's budget. A Czecho-Slovakian Air Transport Co. will be subsidized to operate the Berlin-Prague-Vienna-Bratislava Line. 38 million crown are provided as an additional credit for the construction of new military machines.

Aircraft Standardization

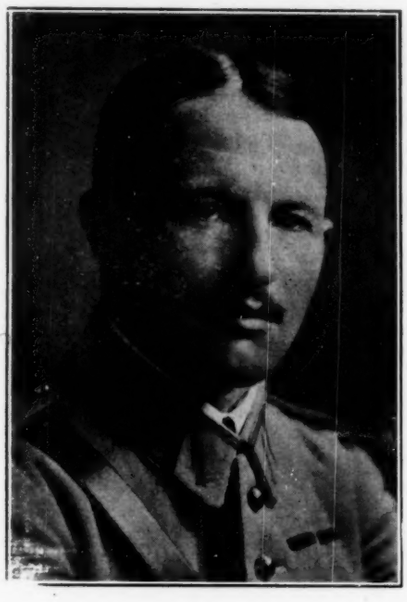
Several conferences have been held during the past month by the Aircraft Standardization Committee, representing the Society of Automotive Engineers, Aeronautical Chamber of Commerce and Manufacturers Aircraft Association. The preliminary drafts of a proposed code as circularized by the joint sponsors, are being examined in detail for sympathetic criticism and discussion in the near future.

Captain Georges Thenault

French Air Attache, Washington, D. C.

Captain Georges Thenault, French air attache in Washington, D. C., whose portrait appears below, was born in France in 1887. He entered the Military Academy at Saint-Cyr in 1906 and graduated as a sub-lieutenant in 1908.

His first assignment was with the Alpine Troops and lasted four years, in the course of which he became instructor in the ski-ing school of the French army. In 1913 he was attached upon his own request to the air service and was graduated a pilot. Upon the outbreak of the war, in August, 1914, he was attached with his unit to a field army and in this capacity he effected a large amount of reconnaissance and liaison work. In 1915 he was appointed commander of a squadron, and in the following year he was placed in charge of the newly formed Lafayette Escadrille. He retained command of this squadron until 1918, when it was incorporated in the American army, and he was then appointed chief pilot of the aerobatic school at Pau. For his gallant conduct and distinguished service in the war Captain Thenault was made a Chevalier of the Legion of Honor, and he was cited four times in army orders.



Capt. Georges Thenault, formerly commander of the Lafayette, Escadrille, French, Air Attaché, Washington D. C.

In 1919 he was attached to the Under-Secretariat of Aeronautics, in charge of the bureau which supervised the construction of bombardment planes, seaplanes and propellers. In 1922 Captain Thenault was appointed air attache at the French embassy in Washington, D. C.

Captain Thenault has published a very interesting book of personal reminiscences on the Lafayette Escadrille which he commanded for two years. The book is a valuable human document of the life led by the Americans who were the first to repay on the field of battle America's debt to Lafayette.*

*THE STORY OF THE LAFAYETTE ESCADRILLE. Told by its Commander, Capt. Georges Thenault. Translated by Walter Duranty. With an Introduction by Andre Tardieu, High Commissioner of Franco-American Affairs. (Small, Maynard & Co., Boston.)

"If war were declared to-morrow what would we do for aircraft?"

Regarding the New N.A.C.A. Nomenclature

A Letter from Lester D. Seymour

The article "The New N.A.C.A. Nomenclature" by Ladislas d'Orcy which appeared in the April 16 issue of AVIATION *has elicited from L. D. Seymour the letter which is printed below in accordance with the writer's request. Mr. Seymour's attitude is exactly the reverse of the very plea he makes that "we should all be pulling together." If this nomenclature were the first effort of its kind made by the National Advisory Committee for Aeronautics, some of its shortcomings might perhaps be overlooked. Considering, however, that the latest Nomenclature is, we believe, the fourth of its kind approved by the N.A.C.A., each successive Nomenclature superseding the previous issue, some frank criticism seemed timely.*

It is entirely proper that a publication which has to employ a nomenclature as one of its daily guides should ask that approved terms should be well weighed before adoption and then clearly defined. Furthermore, it is suggested that if editors who are in close contact with the practical side of aviation were given an opportunity of making suggestions before such a report is issued, the need for criticism in the editorial columns would largely be obviated.—AVIATION.

Editor, AVIATION:—

My attention has just been called to an article appearing on page 418 of AVIATION for April 16, 1923. This article consisting of a criticism of National Advisory Committee Report No. 157, by Ladislas d'Orcy, should not, it seems to me, be allowed to pass unchallenged.

Not only in defense of the particular report in question but as a protest that such an article should be printed in an American aeronautical periodical, I am submitting the following comments which possibly you may care to have printed in the interests of all concerned.

In the first place many of the men who made up the committee preparing the new nomenclature for aeronautics were fliers in the fullest sense and not of the "arm chair" variety. They would undoubtedly welcome constructive criticism. However, it would seem that it ill behooves anyone to attempt to set at naught in two pages of a decidedly frivolous article the work of months carefully put down in over fifty pages of serious contemplation of the subject. Anyone familiar with the labor of compiling such a work will realize the stupendous nature of the task and that some errors must creep in. In these days when aeronautics in the United States is struggling to maintain its place with the world's progress, he who really has his heart in this progress should be rather inclined to assist in building up than tearing down. No real good can come from wrangling within our own ranks such as articles similar to Mr. d'Orcy's are very likely to cause.

Even though it is certain that British terminology was not overlooked in this compilation, there seems to be no well founded reason why our industry should continue to copy Great Britain if improvement can be made thereon. In the following paragraphs a few of the phrases perplexing Mr. d'Orcy are interpreted from another standpoint. It may be that readers would be interested in looking at both sides.

In the first column we find "air language" compared with "ground language." In any science or art technical terms exist which are more or less indispensable to engineers, designers, etc., even if these terms are not frequently encountered in the field. Many technical engineering terms found useful are probably unknown to the man who feeds the boilers or operates the lathes.

Referring to definitions of specific words, the use of "altigraph" does not seem to be entirely "fanciful" as Mr. d'Orcy would have us believe. It would seem even better fitted to describe an instrument tracing a continuous record of altitude than the word "barograph," the latter quite easily suggesting only "barometer" or pressure indicator.

The absence of greater reference to terms denoting personnel and aircraft employed only in the military establishment should have been self-explanatory, it having been noted that the committee was made up in a large part of Army and Navy men. Certainly these men did not forget those terms in every day use in their respective services. It is quite reasonable to presume that they did not want to limit the use of the terms printed to those applying to military or naval operations.

As to "airways," etc., in the presence of a multiplicity of words indicating places where provision has been made for the operation of aircraft, it is not inconsistent that an effort was made to define some of the terms so that they would have an exact meaning. For example—it is not apparent that the nomenclature indicates that an airport is not a fully equipped landing field. Because the Air Mail Airway has "airports" at its terminals, the definition of an "airway" cannot be taken to preclude the establishment of airports along its pathway where other lines have made the same necessary.

Certainly there must be some manner in which to differentiate between places where an airplane *can* alight with those at which great commercial aerial activity center and important lines have their termini. When international airways become existant and regular commercial traffic over them is in effect, such "airports" will have all the equipment of a marine port, including customs offices, etc. As an analogy, we do not call every dock built into the sea a "seaport" and in the past the practice has not caused any very great confusion. Many land routes exist indicating direction or pathway, but they are not always "highways."

Clearly, the definition for a cross country flight is worded to preclude only flights over and very near starting points. To me the definition of an airport implies the presence of a landing field where a "cross country flight" may terminate. If a pilot is forced to land in a corn field it is a good bet that he was not "within gliding distance" of a regular landing field.

In the matter of the classification of aerostats, a careful reading of a preceding definition for "aircraft" should suffice. In that a parachute is a man carrying device, it has a much different mission than a barrage balloon. In Mr. d'Orcy's comparison "life boat" would have been a much more fortunate term to have hit upon than "life belt."

In the absence of a definite knowledge of the future shape of structures to contain lifting gas, is it not logical to avoid terms descriptive of shape and adopt one applicable to all? Referring to the same discussion, is it not apparent to anyone familiar with aerostation why hydrogen was especially mentioned? To date, helium and other lifting gases have not been used commercially to any appreciable extent. If it is true that engineering science has as yet only built keels for airships of a type best described as "elaborate," is there any reason that we should shy off at the word?

Referring to the pathetic discussion of the terms "nose heavy" "bow stiffener," etc., it would seem entirely reasonable that a term applying to a condition of operation might be somewhat different than a technical term applied to a constructional feature. It may be that in what seems a discrepancy to Mr. d'Orcy, the Committee was actually doing what he earlier suggests—attempting to abide by flying field terminology where possible. In this connection, the writer hesitates to credit even the lay public with such conclusions as have been pointed out. In nautical history and marine navigation, the bows of ships have been referred to frequently without anyone ever having jumped to the conclusion that

the term indicated some polite maneuver indulged in by the ship.

This letter might take up in turn each and every word discussed throughout the article in question, such as pointing out the possibility of a flying machine having somewhat different apparatus to enable it to alight on the restricted deck of a ship than that required on a large landing field; to suggest that the N.A.C.A. in defining a "glide" simply meant to show the difference between remaining in the air by means of engine power and otherwise; to ask how many times anyone connected with aeronautics has been confused in attempting to figure out what "useful load" included and if the word "endurance" does not imply more than the time that an aircraft can remain aloft. There seems to be small reason, however, of further pointing out that much less effort has been expended in attempting helpful discussion than in weakly attempting to make light of a serious effort to assist in the development of the art.

Would it not be better for everyone interested to point out that the full nomenclature can be secured from the public printers at 10c per copy than to give a fragmentary presentation of parts of definitions as has been done? If there is then real criticism made toward helping and of a constructive nature, the only real way to accomplish anything at all is to address the Committee direct that is responsible for the report. It can safely be assumed that the organization mentioned will welcome such communications and accredit them every proper attention.

In concluding this letter I would suggest once more that especially at this time we should all be pulling together instead of against each other.

L. D. SEYMOUR

Washington, D. C., May 2, 1923

The Beaumont Speed Cup

The Aero Club of France announces that a new international speed contest has been instituted by Commodore Louis D. Beaumont, an American sportsman, who offers a prize of 200,000 francs. The organization of the race for the Beaumont Cup has been entrusted to the Aero Club of France, and will take place at Istres on Oct. 14, over a 50-kilometer course which will have to be covered six times. The Beaumont donation takes the form of two trophies valued at 25,000 francs each, and two cash prizes of 75,000 francs each.

The winner of the first race will receive, provided he has exceeded a speed of 290 kilometers (180 miles) per hour, the first prize of 75,000 francs. The second 75,000 francs will be awarded to next year's winner. With regard to the two trophies the Aero Club of France announces that one of these will be awarded to the constructor of the winning plane and the other to the pilot who shall have attained the greatest speed in the two contests.

Entries must be made before 6 p. m. on Aug. 1, 1923, to the Commission d'Aviation de l'Aéro Club de France, 35 Rue François Ier, Paris, from whom all further information can be obtained.

Aeromarine Airliner Returns

The Aeromarine airliner "Buckeye" arrived at its home airport at 1 p. m. May 11, from Miami, Fla., with seven people aboard. The journey, covering some 1500 miles, required seventeen flying hours, the start having been made from Miami at 8 a. m. on the 9th. In twelve hours flying that day 1100 miles were compassed, the night being spent at Manteo, N. C.

Among the passengers was Dr. James W. Inches, former Police Commissioner of Detroit and recently candidate for mayor of that city. The "Buckeye" is part of the Aeromarine West Indian air fleet which is being flown north for summer service out of New York and on the Great Lakes.

The British Imperial Air Line

The question of an imperial air line which would connect the British Isles with Egypt, Mesopotamia, India, Burma, the Straits Settlements and Australia, has for some time received the careful attention of the British government. It was originally intended to operate such a service with large rigid airships, but the huge cost this enterprise would entail has so far proved a serious obstacle to an imperial airship line.

Instead, it now appears that the British government is much more inclined toward establishing a London to Australia airway service by means of very large airplanes. According to a recent issue of the *Overseas Daily Mail*, this project was very carefully investigated by the British Civil Aviation Department, which is headed by Sir Sefton Brancker, and the conclusions of the relative report have been entirely favorable.

It is proposed to operate this service with all-metal airplanes fitted with three 1000 hp. engines which would be capable of flying without refueling a distance of 1500 miles at a cruising speed of 100 m.p.h. Two engines out of three would maintain these machines in horizontal flight at cruising speed, so that failure of one engine would not cause an interruption of the flight. The cruising speed would be maintained flying on two engines. Automatic stabilizers would enable the machines safely to fly in fog and thick weather, and radio direction finders would keep them on the right course.

A route has been tentatively mapped out for this service, with the ports of call lying entirely in British territory, as follows: London, Malta, Cairo, Basrah, Karachi, Calcutta, Rangoon, Singapore, British Borneo and Australia.

It is stated that the British Air Ministry will shortly organize a competition for airplanes fulfilling these requirements.

Paris-Constantinople Air Line

The airplane service linking Paris with Budapest, Belgrade Bucharest, and Constantinople was inaugurated March 20, according to a report to the Department of Commerce from Consul K. S. Patton, Belgrade. Planes leave Belgrade on Mondays, Thursdays, and Saturdays at 7 a. m. for Bucharest, and on Tuesdays, Thursdays, and Saturdays at 6.45 a. m. for Budapest. Planes from Budapest arrive at Belgrade at 6.15 p. m. on Wednesdays, Fridays, and Saturdays, and from Bucharest at 5 p. m. on Mondays, Wednesdays and Fridays.

The service to Constantinople is via Bucharest. These services connect with the Budapest, Vienna, Paris, and London airline, and with the Prague-Warsaw airline. The landing grounds are at Pancevo, not Zemun, as was previously contemplated. A special motor boat service requiring about two hours, furnishes transportation between Belgrade and Pancevo for the airline passengers.

Prices in French francs for fares, baggage and parcels are as follows:

	PASSENGERS	BAGGAGES per kilo.	PARCELS per kilo.
Belgrade-Paris	725	7.00	8.00
Belgrade-Strasbourg	565	5.50	6.00
Belgrade-Prague	350	3.50	3.75
Belgrade-Warsaw	570	5.50	6.25
Belgrade-Vienna	235	2.25	2.50
Belgrade-Budapest	145	1.50	1.75
Belgrade-Bucharest	215	2.00	2.25
Belgrade-Constantinople	425	4.00	4.50

Commercial Aviation in Saxony

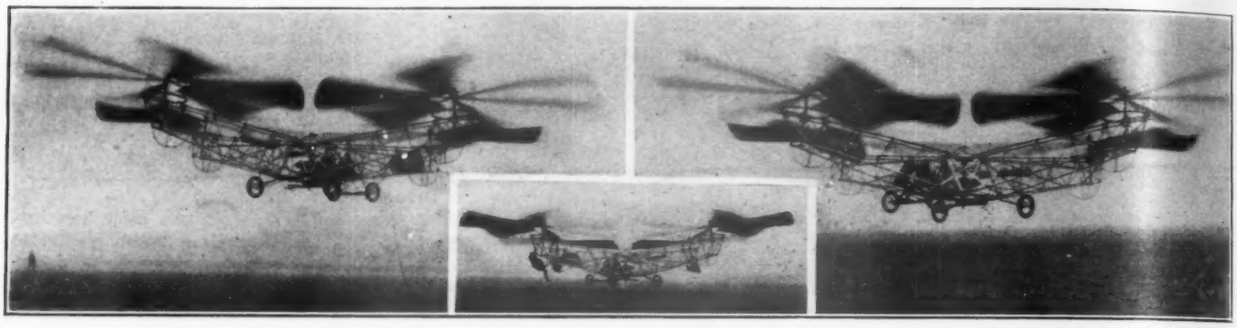
Consul Louis G. Dreyfus, Jr., Dresden, Germany, reports that ten million marks will be appropriated this year by the Saxon Government for the promotion of a regular commercial air service throughout Saxony.

"If war were declared to-morrow what would we do for aircraft?"

New Trials of de Bothezat Helicopter

The three photographs of the de Bothezat helicopter which are reproduced below and which have kindly been contributed to AVIATION by Prof. George de Bothezat, the inventor of this interesting machine, illustrate a series of tests which have been conducted at McCook Field, Ohio, on April 17, 1923.

On that day several weight lifting trials were made, first one man, then two men, and finally three men being lifted off by the de Bothezat helicopter in addition to the pilot, Col. T. H. Bane, formerly commandant of McCook Field. To make certain that these performances were not the result of lucky circumstances, each weight lifting flight was repeated, at least once. On every occasion the machine rose into the air and hovered steadily until the thrust was reduced and a landing was effected. On one occasion even five people were



On the left, the de Bothezat helicopter is seen hovering; on the right, the machine is rising with two men on board; in the insert three men are shown hanging to the arms of the helicopter while it lifts off. Col. T. H. Bane piloted the machine in these trials, made April 17, 1923, at Dayton, Ohio

very slightly lifted off. The flight with four men on board was particularly instructive, for although the man who was hanging onto the rear arm of the helicopter represented an unbalanced force—there being no counter weight on the opposite, fourth arm—the machine easily maintained horizontal equilibrium and proved entirely maneuverable. This is obviously due to the horizontal control system evolved by Prof. de Bothezat, which operates by changing the pitch (or incidence) of the lifting propellers. This very severe trial was therefore a brilliant vindication of the worth of this system.

In connection with these trials, Prof. de Bothezat points out that outside of the obvious military applications of the helicopter, such as artillery observation and liaison work in trench and mountain warfare and from board ship, the direct lift machine also offers interesting possibilities for commercial purposes. For instance, interurban services could be established by means of helicopters, which would land either on the flat roofs of houses or else in small courtyards and thus supplement the intercity airplane services, the terminals of which are as a rule removed from the center of cities. The loss of time which the eccentric location of flying fields now entails would thus largely be overcome.

New Light Plane Prizes

The London *Daily Mail* offers a prize of £1,000 for an international light plane competition which will be held by the Royal Aero Club of the United Kingdom in England next September or October. The exact date and place of the competition will be announced later.

The competition is open to persons of any nationality holding a license issued by an aero club or aero association affiliated to the F.A.I. (in the case of the United States the National Aeronautic Association, 26 Jackson Place, Washington, D. C.), and to heavier-than-air craft fitted with engine having a maximum cylinder capacity of 750 cubic centimeters. The competition will be won by the entrant who shall have covered the greatest distance in one flight on a maximum fuel allowance of one British Imperial Gallon. The minimum distance qualifying for the prize is 50 miles, and the fuel shall be "such as can be commercially obtainable in bulk." The weight of the pilot must be made up to a minimum of 168 lb.

Competitors may use any launching device provided by themselves. They must furthermore demonstrate to the contest officials that the machine is capable of being transported on the ground a distance of one mile by not more than two persons without the use of any extraneous tackle, within a period not exceeding three hours. The course selected for this test will include the getting out of a field through an ordinary gateway, 10 ft. wide and proceeding along a 15 ft. road, occupying not more than half the width of the road. This test must satisfactorily be passed before any distance flight in the competition is made.

The distance flight will be made over a triangular course of not less than 15 miles, and will have a range of hills on one side. The start will be from a hill in the locality selected, and there is no restriction as to the number of attempts a competitor may make.

The entry fee of £5, together with the entry form, must be received by the Royal Aero Club, 3 Clifford St., London W. I., Eng'and, not less than seven days prior to the date fixed for the start of the competition.

The Royal Aero Club, in the interests of safety, reserves to itself the right to refuse any entry, and/or to prohibit the flight in the competition of any competitor if it considers the flight would be dangerous.

Competitors must comply with the Air Navigation Regulations in force in Great Britain, subject to any concession which may be made by the Air Ministry for this competition. This provision has been inserted in the rules of the competition in the hope that the Air Ministry will either waive or modify for light planes the airworthiness certificate, which now entails a fee of £65.

A prize of £500 is offered through the Royal Aero Club by the Duke of Sutherland, Under-Secretary of State for Air, for an identical competition, but this is open to British subjects only.

Fast Flight by Loening Air Yacht

An unusually fast flight was made by a Loening Air Yacht constructed for the Army Air Service on May 14 when it flew from New York City to Hampton Roads, Va., a distance of 310 miles, in two hours and a half. The average speed maintained was 120 m.p.h.

The pilot was Lieut. Charles B. Austin of the Army Air Service, who was on the recent Porto Rico Flight, and the passengers were Grover Loening, the designer of the Loening Air Yacht and Mechanic Wiedercamp.

The type of machine is the same as the Loening Air Yachts that will be used on the New York-Newport Air Service this summer.

ARMY AND NAVY AIR NEWS

U. S. Army Air Service

Army Orders—Tech. Sergt. William Wendell, Q.C., will be placed upon retired list at Chanute Field.

First Lieut. Harlan W. Holden, A.S., granted two months leave of absence.

Maj. Henry C. Pratt, A.S., relieved from General Service Schools, Fort Leavenworth, Kan.; to Army War College for duty as student.

Sec. Lieut. Thomas E. Kokjer, A.S., honorably discharged at Walter Reed General Hospital, Takoma Park, D. C.

Maj. Lawrence W. McIntosh, A.S., to command A.S. Engineering School, McCook Field, Ohio.

Maj. Alfred H. Hobley, A.S., to duty as assistant commandant, A.S. Engineering School, McCook Field, Ohio.

Orders directing First Lieut. Milo McCune, A.S., to sail on transport leaving San Francisco on May 23, 1923, for the Philippine Islands, amended to direct him to leave July 14, 1923, instead.

First Lieut. Solomon L. Van Meter, jr., A.S., relieved from observation and treatment at Walter Reed Hospital, Takoma Park, D.C. (not Letterman General Hospital, as previous order stated).

* * *

Night Flying Experiments at Mitchel Field—An interesting night flying experiment was tried at Mitchel Field, N. Y., on the night of April 6. An ordinary floodlight was connected with an electrically driven device which automatically made and broke the circuit. By flashing two dashes of three seconds each and two dots of one and one-half seconds each, it was possible to spell out M I, the first two letters of the word Mitchel, in the Morse International Code at intervals of twenty seconds. In addition to the fact that the international code is universally recognized, this system has economy in its favor as the one light is burning less than one-half of the time.

To accomplish this result by other means it would necessitate spelling out letters and symbols which would require several lights of the same candle power to secure equal visibility. A disappearing light would also be much more apt to catch a pilot's eye than a permanent light, due to the number of permanent lights which are visible in certain localities.

Capt. Ira C. Eaker flew for nearly an hour to determine the effectiveness of the signals and upon landing stated that they were easily read from comparatively close range. The lack of range is attributed to the low candle power of the light used, and the inability to secure a proper searchlight effect.

Plans are under way to use a stronger light and with certain improvements suggested by the experiment conducted, it is hoped to attain a visibility of ten miles. When this is achieved it is believed that this system will be a valuable aid to night flying.

* * *

A.S. Recruiting Campaign—The Air Service has requested authority from The Adjutant General of the Army to open a recruiting campaign this month. The next few months will see the graduation from the various courses at the Air Service Technical School, Rantoul, Ill., of several hundred students, who upon the completion of their respective courses will be assigned to different units.

If given authority the Air Service hopes to add about 200 recruits to its ranks, all of which will be obtained in the vicinity of Chanute Field.

Airship TC1 at Scott Field—The U. S. Army airship TC1 arrived at Scott Field from Akron, Ohio, at 5.00 p. m. on April 9, thus marking an additional step in the development of this field as the chief lighter-than-air flying station in the United States. The big craft, which cost about $60,000, will be used for cross-country training trips.

The TC1 is the sixth power craft in service at Scott Field, in addition to a DeHaviland airplane. There are also at the field a number of captive observation balloons. Three more ships are expected soon, and possibly four others by July 1, as well as several DeHavilands.

The airship was flown to Scott Field from the air station of the Goodyear Tire and Rubber Co., which built it, and the approximate distance of 500 miles was covered in an actual flying time of 12 hr. 50 min. about five hours less than it takes an express train to go from St. Louis to Akron.

The take-off was at 3.15 a. m. Eastern time, and the landing at Scott Field at 5.40 p. m. Central time. A stop of 2 hr. 35 min. for rest, food, fuel and minor repair of an exhaust pipe, was made at Fort Benjamin Harrison, near Indianapolis, Ind. The crew comprised four men from Scott Field— Lieut. F. M. McKee in charge, Lieut. Clyde A. Kuntz, and Sergeants Olin Brown and Harry Barnes. Lieut. James C. Cluck of Washington, D. C., was along as official observer, and an observer from the manufacturers was aboard also. Most of the time the ship flew between 1200 and 1500 ft. altitude, with an average speed of 38 m.p.h. a head wind slowing the craft's progress.

* * *

Policy Governing Sale of Surplus War Equipment—The following letter from the President has been received by the Secretary of War:

"THE WHITE HOUSE
Washington April 23, 1923.

"My dear Mr. Secretary:

"Referring to your inquiry for advice relative to the sale of surplus arms and war supplies to proposed purchasers among foreign powers, I am writing to say that I hope it will be the policy of the War Department not only to make no sales of war equipment to any foreign power, but that you will go further and make certain that public sales to our own citizens will be attended by proper guarantees that such supplies are not to be transferred to any foreign power. I would gladly wave aside any financial advantage that might attend such sales to make sure that none of our surplus equipment is employed in encouraging warfare any place in the world. I am writing a similar note to the Secretary of the Navy and shall confidently expect the cooperation of both Departments in adhering to this policy.

"Very truly yours,
WARREN G. HARDING."

Hon. John W. Weeks,
Secretary of War,
Washington, D. C.

* * *

General Patrick Inspects Brooks Field—Maj. Gen. Mason M. Patrick, Chief of Air Service, made an inspection of Brooks Field, San Antonio, Tex., on April 10. Very adverse weather conditions did not give him an opportunity to watch the flying of the students. He was given a reception at the Officers' Club that night, at a dinner dance, and the following morning made a short visit in a DH plane with Major Dargue as pilot. The General was greatly pleased with the conditions as he found them on the field.

"If war were declared to-morrow what would we do for aircraft?"

How Far Does a DH4B Roll?—The Tenth School Group at Kelly Field, San Antonio, Tex., recently conducted experiments for a period of several weeks to determine the distance a DH4B will roll on an average field, against an average wind, piloted by an average pilot. The calculations were based on the performance of nine pilots, each of whom made ten landings. The first experiment was with the spark advanced and both switches on until the ship had come to a standstill. The results averaged as follows:

Yards rolled, 214; yards short of landing, 17.6; yards over landing line, 21.4; wind velocity, m.p.h., 14.4; three point landings, 78.89 per cent, wheels first landings, 7.77 per cent, tail first landings, 10 per cent, porpoise landings, 3.34 per cent; largest number of yards rolled, 360; smallest number of yards rolled, 116.

The second experiment was with the spark retarded, one switch cut and the other off and on, enough to keep the propeller from stopping. The averages were as follows: Yards rolled, 161.6; yards short of landing line, 23.5; yards over landing line, 15.3, wind velocity, m.p.h., 14.1; three point landings, 77.78 per cent; tail first landings, 12.22 per cent; wheels first landings 8.89 per cent, porpoise landings. 1.11 per cent; longest landing, 264 yd., shortest landing, 101 yd.; longest landing average, 197 yd.; shortest landing average, 133.2 yd.

Although these landings are made in a straight line, it is estimated that the pilot could safely turn to the right or left to prevent running into a fence the last fifty or sixty yards of the distance rolled.

Another outstanding feature of the experiments is that side slips, skids and other trick landings are not the best means to get into a small field, but the shortest landing can be obtained by settling to the point the pilot desires to set his ship on the ground with motor throttled, nose up enough to have a minimum speed.

The next experiment to be conducted will be landing over a 10-ft. obstacle with spark advanced and both switches on. This experiment has not been completed.

* * *

Engineering Course of A.S.O.R.C.—Simultaneously with the course in Aircraft Maintenance for Air Service officers which finished at McCook Field on April 1, there was successfully completed a three-months course in General Maintenance of Aircraft and Equipment for Air Service Reserve officers.

The latter course was the first to be given at McCook Field for Reserve Officers, and to it were assigned for instruction the following: Capt. G. H. Keller, Philadelphia, Pa.; Lieut. Frank C. Crowley, Dorchester, Mass.; Lieut. E. H. Holterman, Woodstock, Vt.; Lieut. L. W. Stanton, Buffalo, N. Y. and Lieut. W. F. Watson, Newport, R. I.

During the course these officers were placed on flying status and permitted to fly different types of planes after receiving short instructions. The course was made up of practice and engineering theory in the proportion of about 70 per cent practical work and 30 per cent class work, and included experience in the shops at the field, in the rigging of Curtiss and DH planes and the overhauling of Wright Hispano motors. The men appeared to enjoy the course and became quite enthusiastic over the Engineering end of the Air Service.

It is not known at this time whether there will be another course for Reserve Officers given at McCook Field. If there is another, the class will probably not exceed ten in number.

* * *

Acting Secretary of War Congratulates Lieut. Macready—Dwight F. Davis, Acting Secretary of War, has sent Lieut. J. A. Macready, A.S., the following letter of congratulation:

May 7, 1923.

First Lieut. John A. Macready, Air Service,
McCook Field,
Dayton, Ohio.

My dear Lieutenant Macready:

I take pleasure in extending to you in the name of the Army congratulations on your great achievement with First Lieutenant Oakley G. Kelly, Air Service, in making a non-stop, transcontinental airplane flight from Mitchel Field, Mineola, New York, to Rockwell Field, San Diego, California, May 2 and 3, 1923, in twenty-six hours, fifty minutes, thirty-eight and two-fifths seconds.

This remarkable flight, while in fact establishing a new world record in aviation, also adds a new and brilliant page to the history of the Air Service and the Army, and is a source of pride and gratification to the officers and soldiers of all grades and services.

A copy of this letter has been filed with your efficiency record.

Sincerely yours,

DWIGHT F. DAVIS,
Acting Secretary of War

U. S. Naval Aviation

Aircraft Squadrons, Scouting Fleet—Shifting the engines of a seaplane at sea is a new wrinkle in aviation, but is all in the day's work for the squadrons which made the cruise to Panama and return with the Fleet. The following account is quoted from the latest report of the Aircraft Squadrons Scouting Fleet:

"Plane No. 15 left Miami on Wednesday morning, April 25, and landed at sea about 28 miles north of Miami because of rapidly rising oil temperature on one engine. Upon inspection of oil pump a quantity of bearing metal was found adhering to upper strainer. It was considered necessary to change this engine. Plane No. 14 sent a radio to the Sandpiper informing her of the trouble and No. 15 started taxiing toward Miami. The sea was fairly smooth and after taxi-ing for about an hour it was decided that it would be practicable to change engines at sea, thus saving considerable time and avoiding the re-employment of a Miami pilot by the Sandpiper. Radio communication was established on the skidfin antenna and the commanding officer of the Sandpiper replied that he also deemed it practicable. At 11.10 a. m., plane No. 15 went astern of the Sandpiper, which had just anchored, rigged her boom and broken out a new engine from below decks. Two men had been working on the bad engine while taxi-ing and had it nearly ready to come out of the plane. The new engine was installed and lines cast off from the Sandpiper at 3.10 p. m. It started readily and at 3.20 p. m., plane 15 took off with 375 gal. of gas and flew to Titusville, making Fernandina early the next morning and catching up with the Squadron. It is believed that the record of four hours for changing an engine at sea is quite noteworthy and is therefore mentioned."

All planes arrived at Hampton Roads, April 27. Planes of this squadron were turned in for overhaul and reconditioning, and the Wright, Teal and Sandpiper continued on to the Navy Yard Philadelphia where leave will be granted to personnel of the ships and aircraft personnel.

* * *

Impromptu Review of Fleet by Secretary Denby in Navy Vought—Probably the first review of the Fleet by a Secretary of the Navy flying his flag from a naval plane is related in connection with the joint fleet maneuvers in Panama last month. The review was not on the schedule of events and was incidental to an inspection flight made by Secretary Denby over the Panama Canal, but as the Vought seaplane winged her way down the line of battleships with the flag of the Secretary streaming from one of the struts of the plane there was a lively scramble of officers-of-the-deck to turn out guards and bands.

Secretary Denby took off from the U.S.S. Maryland, and after an hour's flight over the Canal and the assembled Fleet, was landed alongside the U.S.S. Langley to witness exercises of flying planes on and off the deck of the carrier.

Scouting Plane Squadron Commended by Admiral McDonald—On the occasion of the departure of the F5L's from Guantanamo, Cuba, at the conclusion of the winter exercises, Admiral J. D. McDonald complimented the officers of the scouting plane squadron on their cooperation with the Fleet. The following endorsement applying to the Scouting Plane Squadron is quoted:

"The Scouting Fleet Commander cannot speak too highly of the initiative, judgment and skill shown by the Aircraft Squadrons Scouting Fleet that accompanied the ships to Panama and return during the past winter.

His remarks may best be summarized by saying that it has been a pleasure to him to have such an excellent operative air unit under his command."

* * *

Scouting Squadron One, Guam, M. I.—Two F5L seaplanes have been allotted to this squadron. These planes are being overhauled at the Naval Aircraft Factory prior to shipment to Guam, and are replacements for similar planes which are about worn out in service.

* * *

Naval Air Station, Coco Solo, C. Z.—During the stay of the Aircraft Squadrons, Scouting Fleet, in the Canal Zone, the cooperative spirit of the Naval Air Station, Coco Solo, has been so marked that the Commandant, Fifteenth Naval District, has congratulated the C. O. of Coco Solo on the excellent record made by the station. Upon the arrival of the Squadrons, the commanding officer of the Naval Air Station, Coco So'o, placed the facilities of his command at the service of the Commander, Aircraft Squadrons. The interests of the Air Station were temporarily subordinated to those of the Aircraft Squadrons. The successful participation of the Squadrons in the exercises off Panama were in no small degree due to the facilities made available. Capt. W. R. Gheradi, Commander, Aircraft Squadrons, expressed to the Commandant, Fifteenth Naval District, his appreciation of the excellent spirit shown by one of the units under his command.

* * *

Naval Air Station, Anacostia, D. C.—A mix-up between a fishing boat and an HN1 training plane was voted a draw when the encounter occurred in the Potomac River last week. The plane and the fishing boat were both sadly in need of repair when the two were untangled, but both the crew of the plane and the boat escaped uninjured. The HN1 was taxi-ing on the water at the time, and when the fishermen saw that a collision was unavoidable they took to the water forthwith. Not having the same freedom of movement the pilot and observer stuck by the plane and were later assisted from the wreckage by air station personnel.

* * *

Naval Air Station, Hampton Roads, Va.—The F5L and PT planes turned in by the Scouting Fleet have been received and the station is preparing to issue twelve F5L's in return. Twelve DT's are being assembled and tested for replacements.

* * *

Naval Air Station, Lakehurst, N. J.—Shipment orders have been issued for a JN airplane for this station to be used for messenger service.

* * *

Naval Air Station, Pearl Harbor, T. H.—Three JN airplanes are ready for shipment from San Diego to this station. These are the first landplanes for operation at this station.

* * *

Naval Air Station, San Diego, Calif.—This station has just completed construction, by enlisted labor, of a crash boat of two R6L pontoons and one OXX engine with propeller. Trial trips have been completed and it is estimated that the speed of the boat will exceed 25 knots.

Portable Mooring Mast for Airships—A portable rigid airship mooring mast which may be used extensively in advance base operations by naval airships and which would also have great value in connection with the commercial operation of airships is being developed by the Navy Department.

Preliminary design of the portable mast has been completed and if further development proceeds as favorably as at present, it is probable that several will be constructed for use in connection with the extended flights of the ZR1.

The mast as designed is about 115 ft. high as compared with 165 ft. for the permanent mast at the Naval Air Station, Lakehurst. The portable mast, however, is intended to be set up with a minimum of labor and possibly to remain set up for a comparatively short space of time. Consequently the lower height of the mast would be an advantage, although it requires a little more careful handling of the ship while at the mast. The plans provide for an extremely simple structure. It is intended that as great a use as possible shall be made of the facilities afforded by the locality in which the mast may be set up and no extensive foundation or anchorage of concrete will be required.

The value of the portable mast to airship operations far removed from a permanent base is obvious.

* * *

Propellers for ZR1 to be Wired to Prevent Electrical Discharge—The propellers for the ZR1 have brass tips which are electrically connected to the engine nubs by wires laid in grooves in the center laminations. This practice is required in airship propellers in order that the surface charge generated by the friction of the air may be drawn off steadily and not allowed to pass with violent sparking and danger of fire. The geared propellers of the ZR1 are of mahogany 17 ft. 6 in. in diameter and weigh 235 lb. The direct drive propellers are constructed of oak, 11 ft. 6 in. in diameter and weigh 75 lb.

* * *

Japanese Delegate to L. of N. Visits Anacostia—Vice Admiral Baron Abo, Japanese naval delegate to the League of Nations, accompanied by members of his staff and other Japanese naval officials visited the Air Station in Anacostia last Monday, and was present when the Marine Corps pilots arrived from San Diego. In the party which accompanied the Vice Admiral was Senior Captain Kuroki of the Japanese Navy, who is the son of the hero of Port Arthur in the Russo-Japan War. Other members of the party were Commander Walda, Lieutenant Commander Saeo, and the Japanese Naval Attaché.

Coming Aeronautical Events

AMERICAN

May 30 — *Fifth Annual Aircraft Exhibition, Flying Club of Baltimore, Logan Field, Dundalk, Md.*
July 4 — *National Balloon Race, Indianapolis, Ind.*
Oct. 1-3 — *National Airplane Races, St. Louis, Mo.*
Late Fall — *Curtiss Marine Flying Trophy Race.*

FOREIGN

June 25-30 — *International Aero Congress, London..*
July 20- — *International Aero Exhibition, Gothenburg,*
Aug. 12 *Sweden.*
Aug. 3-31 — *Sailplane Meet, Rhoen, Germany.*
Aug. 5-26 — *Sailplane Meet, Vauville, near Cherbourg, France.*
Sept. 23 — *Gordon Bennett Balloon Race, Brussels, Belgium.*
Sept. 28 — *Schneider Maritime Aviation Trophy Race, Cowes, Isle of Wight, England.*
Dec. 1 — *Entries close for French Engine competition.*

"If war were declared to-morrow what would we do for aircraft?"

Orders April 24 to April 28—Gunner Ralph T. Bundy, U.S.N.—Detached U.S.S. Wright; to Naval Air Station, Pensacola, Fla.

Lieut. Louis Iverson, (M.C.), U.S.N.—Detached Naval Air Station, San Diego, Calif.; to Naval Station, Guam.

Lieut. George D. Thompson, (M.C.), U.S.N.—Detached School of Aviation Medicine, Mitchell Field, Mineola, L. I., N. Y.; to U.S.S. Langley.

Lieut. Harold M. Martin, U.S.N.—Detached U.S.S. Wright; to Naval Air Station, Pensacola, Fla.

Lieut. (j.g.) Kenneth E. Brimmer, U.S.N.—Detached Naval Air Station, Pensacola, Fla.; to U.S.S. Chewink.

Lieut. William M. Fellers, U.S.N.—Detached Naval Aircraft Factory, Philadelphia, Pa., 5-5-23; to Bureau of Aeronautics, Washington, D. C.

Lieut. Spencer H. Warner, U.S.N.—Detached Aircraft Squadrons, Scouting Fleet; to Naval Air Station, Pensacola, Fla.

Commdr. George R. Crapo, (S.C.) U.S.N.—Detached Navy Yard, Boston, Mass.; to Naval Air Station, Pensacola, Fla., as Supply and Accounting Officer.

Lieut. Comdr. Herbert E. Stevens, (S.C.) U.S.N.—Detached Naval Air Station, Pensacola, Fla.; to Navy Yard, Norfolk, Va., as Disbursing Officer.

Lieut. Hugo Schmidt, U.S.N.—Detached Massachusetts Institute of Technology, Cambridge, Mass.; to temporary duty Bureau of Aeronautics, Navy Department, Washington, D. C.

Lieut. Stanton H. Wooster, U.S.N.—Detached Massachusetts Institute of Technology, Cambridge, Mass., to Office of Naval Inspector of Engineering Material, New York, N. Y.

Boatswain Arthur F. Dietrich, U.S.N.—Detached Aircraft Squadrons, Scouting Fleet; to Naval Air Station, Pensacola, Fla.

Lieut. (j.g.) Robert K. Madsen, Jr., U.S.N.—Detached Aircraft Squadrons, Battle Fleet; to treatment Naval Hospital, San Diego, Calif.

Chief Carpenter Garrison R. Arey, U.S.N.—Detached Inspector of Naval Aircraft G. Elias and Brother, Buffalo, N. Y.; to Asiatic Station.

Pay Clk. Dale A. Palmer, U.S.N.—Detached U.S.S. Langley; to Naval Training Station, Great Lakes, Ill.

Pay Clk. Charles M. Waidner, U.S.N.—Detached Naval Training Station, Great Lakes, Ill., 5-1-23; to U.S.S. Langley.

Lieut. Comdr. Robert G. Davis, (M.C.) U.S.N.—Detached School of Aviation Medicine, Mitchel Field, Mineola, L. I., N. Y.; to U.S.S. Aroostook.

Lieut. Comdr. Andre E. Lee, (M.C.) U.S.N.—Detached U.S.S. Aroostook; to Destroyer Squadrons, Battle Fleet.

Lieut. Comdr. George C. Rhoades, (M.C.), U.S.N.—Orders 4-11-23 revoked, continue duty U.S.S Langley.

Lieut. Michael C. Feber, (C.C.) U.S.N.—Detached Naval Air Station, San Diego, Calif.; to Massachusetts Institute of Technology, Boston, Mass.

Pay Clk. Rufus Hendon, U.S.N.—Detached Naval Air Station, Pensacola, Fla.; to U.S.S. Aroostook.

* * *

Brief Notes—Contract has been placed with Huff Daland for three HN2 training planes. These are modifications of the HN1 and will have the Lawrance J1 engine. The planes are to be sent to Pensacola for further trials as training planes.

Lieuts. H. H. Thornburn and George E. Rumill, U.S.N.R.F., have accepted positions as pilots in a commercial air line operating between New York and Newport, R. I.

An important conference of officers of the Aircraft Squadrons, Scouting Fleet, and Bureau officers was held in Washington on Wednesday, when plans for the summer operations of the air squadrons were presented and discussed.

The three balloons which will be entered by the Navy in the National Free Balloon Elimination Race to be held in Indianapolis July 4 will be delivered by the contractors on June 1, 8 and 15 respectively. This will afford ample opportunity for test before they are sent to Indianapolis for the race.

Commander Leahy has been ordered to command the U.S.S. Wright, thus relieving Commander, Aircraft Squadrons, Scouting Fleet from that duty.

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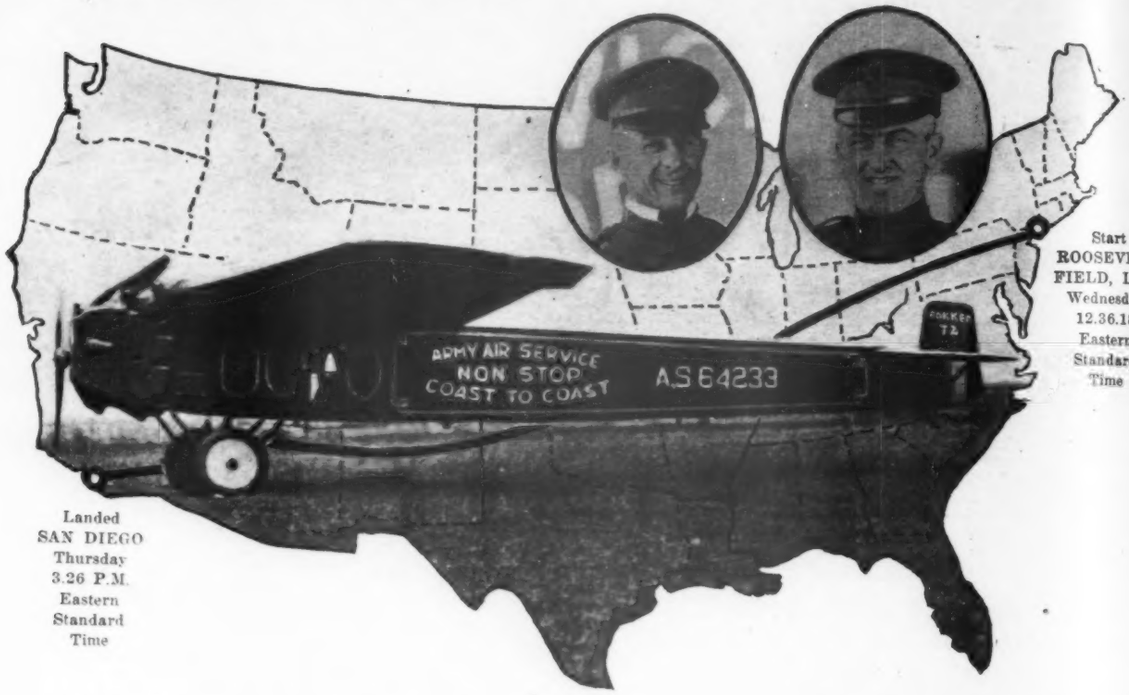

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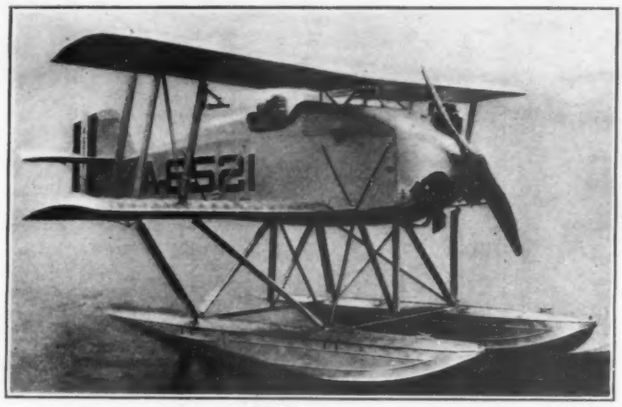

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